

Attachment 2. Information on Cadmium in Blood  
in Smokers versus Non-Smokers  
(from Medline Dialog File 155(

Set	Items	Description	Medline Search Strategy
S1	17	E4, E5, E21	
S2	74451	"SMOKING"	
S3	28171	S2/MAJ	
S4	13979	E4, E5, E21	
S5	624	"CADMIUM --BLOOD --BL"	
S6	235	S5/MAJ	
S7	2073	"CADMIUM --ANALYSIS --AN"	
S8	996	S7/MAJ	
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S12	0	TI=CADMIUM	
S13	7161	CADMIUM/TI	
S14	506	S13 AND S5	
S15	213	S13 AND S6	
S16	906661	"COMPARATIVE STUDY"	
S17	46	S16 AND S6	
S18	149	S9 OR S10 OR S11 OR S17	
S19	120	S18/ENG, HUMAN	
? t s19/9/1			

19/9/1  
DIALOG(R) File 155: MEDLINE(R)  
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10421765 20250233

The German Environmental Survey 1990/1992 (GerES II): cadmium in blood, urine and hair of adults and children.

Hoffmann K; Becker K; Friedrich C; Helm D; Krause C; Seifert B  
Federal Environmental Agency, Institute for Water, Soil and Air Hygiene,  
Berlin, Germany.

Journal of exposure analysis and environmental epidemiology (UNITED  
STATES) Mar-Apr 2000, 10 (2) p126-35, ISSN 1053-4245 Journal Code:  
BJN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 0008

Subfile: INDEX MEDICUS

As a follow-up of an earlier population study carried out in West Germany in 1985/1986 (GerES I), a nationwide Environmental Survey was conducted in Germany in 1990-1992 (GerES II). It was the aim of these studies to obtain representative data on the population's body burden and the quality of their indoor environment and immediate surroundings. The present paper reports on cadmium levels in blood, urine and hair of 4021 adults aged 25-69 and 736 children aged 6-14. The statistical analysis included both descriptive and inferential methods. The data were classified according to social factors, lifestyle characteristics, and environmental exposures. Moreover, regression analysis was used to determine the predictors of cadmium concentrations in the types of sample studied. Active cigarette smoking was found to be dominant in affecting blood and urine cadmium levels in adults, but less important for cadmium levels in hair. Age and creatinine level in urine were additional important factors influencing the cadmium concentration in urine, especially in women. Environmental and occupational exposures to cadmium played only a minor role in the exposure models for German adults. The cadmium concentration in blood and urine was generally lower in children than in adults, while no significant difference for cadmium in hair could be detected. The cadmium concentrations in all three samples were significantly higher in East German children than in West German children.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Environmental Exposure--Analysis--AN; \*Smoking--Adverse Effects--AE; Adolescence; Adult; Age Factors; Aged; Body Burden; Cadmium--Adverse Effects--AE; Cadmium--Metabolism--ME; Child; Environmental Monitoring; Germany; Hair--Chemistry--CH; Middle Age; Occupational Exposure; Regression Analysis; Risk Factors; Tissue Distribution

CAS Registry No.: 7440-43-9 (Cadmium)  
? t s19/9/2-120

19/9/2

DIALOG(R) File 155: MEDLINE(R)

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10416597 20302412

Accumulation of cadmium, zinc, and copper in maternal blood and developmental placental tissue: differences between Finland, Estonia, and St. Petersburg.

Kantola M; Purkunen R; Kroger P; Tooming A; Juravskaja J; Pasanen M; Saarikoski S; Vartiainen T

Department of Chemistry, University of Kuopio, Finland.  
marjatta.kantola@uku.fi

Environmental research (UNITED STATES) May 2000, 83 (1) p54-66, ISSN  
0013-9351 Journal Code: EI2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 0008

Subfile: INDEX MEDICUS

Cadmium, zinc, and copper from placental tissue and blood samples at the first trimester ( $n = 64$ ) and at term ( $n = 152$ ) were analyzed; the welfare of newborns and placental 7-ethoxycoumarin O-deethylase (ECOD) activities in vitro were determined. The study material was collected from Finland, Estonia, and Russia. The results demonstrate that Cd starts to accumulate in the placenta during the first trimester and that Zn and Cu contents were significantly higher at the first trimester than at term. Among nonsmokers a negative correlation was found between placental Cu content and birth weight of neonates. Among smokers a positive correlation between placental Zn content and birth weight and ECOD activity was found. The birth weights correlated inversely with the length of time the mothers smoked. The highest Cd concentrations were detected in the samples collected from St. Petersburg. The data demonstrate an inverse accumulation of Zn and Cd throughout the pregnancy in the placenta and maternal blood samples. Zn may act as a positive marker or even an enzymatic enhancement for the human placental vital functions. Smoking, parity, age, and especially the place of residence affect the Cd, Zn, and Cu contents and ratios in placenta and mother's blood.

Tags: Comparative Study; Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Copper--Analysis--AN; \*Placenta--Chemistry--CH; \*Pregnancy--Blood--BL; \*Zinc--Analysis--AN; Birth Weight--Drug Effects--DE; Cadmium--Blood--BL; Copper--Blood--BL; Drug Interactions; Estonia; Finland; Gestational Age; Infant, Newborn; Placenta--Enzymology--EN; Pregnancy Trimester, First--Blood--BL; Regression Analysis; Russia; Smoking--Blood--BL; Smoking--Metabolism--ME; Zinc--Blood--BL; 7-Alkoxycoumarin O-Dealkylase--Metabolism--ME

CAS Registry No.: 7440-43-9 (Cadmium); 7440-50-8 (Copper); 7440-66-6 (Zinc)

Enzyme No.: EC 1.14.13.- (7-Alkoxycoumarin O-Dealkylase)

19/9/3

DIALOG(R) File 155: MEDLINE(R)

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10395985 20246812

Correlation between urine and blood concentrations, and dietary intake of cadmium and lead among women in the general population of Japan.

Shimbo S; Zhang ZW; Moon CS; Watanabe T; Nakatsuka H; Matsuda-Inoguchi N; Higashikawa K; Ikeda M

Department of Food and Nutrition, Kyoto Women's University, Japan.

International archives of occupational and environmental health (GERMANY)

Apr 2000, 73 (3) p163-70, ISSN 0340-0131 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 0007

Subfile: INDEX MEDICUS

OBJECTIVE: To examine whether lead (Pb) in urine and cadmium (Cd) in blood, especially the former, can be used as markers of environmental exposure of general populations to these metals. METHODS: Between 1991 and 1998, spot urine and peripheral blood samples, together with 24 h duplicates of food intake were collected from 607 non-smoking adult women in 30 survey sites (SS) in seven administrative regions all over Japan. Urine, blood and food duplicate samples were analyzed by inductively-coupled plasma spectrometry, for Cd and Pb in urine (Cd-U and Pb-U), in blood (Cd-B and Pb-B) and in food duplicates (Cd-F and Pb-F). Correlation between the measurements was examined by regression analysis. RESULTS: The Cd-B correlated closely with Cd-U, and both Cd-B and Cd-U with Cd-F, on an individual basis ( $n = 607$ ), on an SS basis ( $n = 30$ ) and on a regional basis ( $n = 7$ ). The Pb-U however did not correlate with Pb-B on a regional basis although they correlated with each other when analyzed on an individual as well as SS basis. Moreover, the correlation coefficients between Pb-U and Pb-B were much smaller than those between Cd-U and Cd-B. Neither Pb-U nor Pb-B showed significant correlation with Pb-F on any levels of statistical analysis. CONCLUSIONS: Both Cd-B and Cd-U can be employed as biomarkers of environmental Cd exposure. The reliability of Pb-U for use in place of Pb-B appeared to be small.

Tags: Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Cadmium--Urine--UR; \*Diet; \*Lead--Blood--BL; \*Lead--Urine--UR; Adult; Cadmium--Administration and Dosage--AD; Food Analysis; Japan; Lead--Administration and Dosage--AD; Middle Age; Population Surveillance; Regression Analysis; Spectrum Analysis, Mass--Methods--MT

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/4  
DIALOG(R) File 155: MEDLINE(R)  
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10323085 20159789

Correlation between concentration in urine and in blood of cadmium and lead among women in Asia.

Higashikawa K; Zhang ZW; Shimbo S; Moon CS; Watanabe T; Nakatsuka H; Matsuda-Inoguchi N; Ikeda M

Kyoto Industrial Health Association, Japan.

Science of the total environment (NETHERLANDS) Feb 10 2000, 246 (2-3)  
p97-107, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 0005

Subfile: INDEX MEDICUS

The objectives of the present study are to examine if there exists a quantitative relationship between lead in urine (Pb-U) and that in blood (Pb-B), and also between cadmium in urine (Cd-U) and that in blood (Cd-B) among the general populations who are environmentally (and not occupationally) exposed to these elements at various levels. For this purpose, peripheral blood and morning spot urine samples were collected in 1991-1998 from approximately 50 non-smoking adult women each in four cities in south-east Asia and five cities in mainland China, and two cities each in Japan and Korea. The samples were wet-ashed and then analyzed by inductively-coupled plasma mass spectrometry for Pb-B, Cd-B, Pb-U and Cd-U. Measured values were subjected to analysis to detect possible correlation between the pairs of parameters. A significant correlation between Pb-B and Pb-U was observed when the intensity of Pb exposure (as expressed by Pb-B) was relatively high so that the correlation was significant in all cases studied when Pb-B level was, e.g. 50 microg/l or above. It was also observed that the correlation between Cd-B and Cd-U was significant when Cd-B was, e.g. > 1 microg/l. Thus, it is possible to deduce that, in environmental health, Pb-B and Cd-U levels can be estimated on a group basis from Pb-U and Cd-B, respectively, when Pb and Cd exposure levels are relatively high, e.g. with Pb-B and Cd-B of > 50 microg/l and > 1 microg/l.

Tags: Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Environmental Exposure; \*Lead--Blood--BL; Adult; Aged; Analysis of Variance; Asia; Cadmium--Urine--UR; Geography; Lead--Urine--UR; Middle Age

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/5

DIALOG(R)File 155:MEDLINE(R)

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09856485 99196899

**Variation in blood concentrations of cadmium and lead in the elderly.**

Baecklund M; Pedersen NL; Bjorkman L; Vahter M

Institute of Environmental Medicine, Karolinska Institutet, Stockholm,  
Sweden.

Environmental research (UNITED STATES) Apr 1999, 80 (3) p222-30,  
ISSN 0013-9351 Journal Code: EI2

Contract/Grant No.: AG-04563, AG, NIA; AG-10175, AG, NIA

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9906

Subfile: INDEX MEDICUS

This study aims at characterizing blood concentrations of cadmium (B-Cd) and lead (B-Pb) in a group of 176 men and 248 women, 49-92 years of age (mean 68 years), selected from the Swedish Twin Registry. Metal concentrations were determined using graphite furnace atomic absorption spectrophotometry. B-Cd ranged from 0.05 to 6.8 microg Cd/L (median 0.36 microg Cd/L) and B-Pb from 5.6 to 150 microg Pb/L (median 27 microg Pb/L). As expected, smokers had higher B-Cd than nonsmokers (median 1.3 versus 0.32 microg Cd/L), while B-Pb was not significantly related to smoking habits. Among nonsmokers, women had higher B-Cd than men (median 0.35 versus 0.25 microg Cd/L). In men, but not women, B-Cd increased with age and consequently the gender-related difference in B-Cd was most obvious in the youngest age group. On the other hand, women had lower B-Pb than men (median 24 versus 30 microg Pb/L). In both men and women, B-Pb decreased between 50 and 70 years of age, perhaps reflecting decreased energy intake. In women, the highest B-Pb in the 50-55 years age group is probably related to an increased release of Pb from the skeleton during postmenopausal bone demineralization. After about 70 years, B-Pb tended to increase, which probably is a cohort effect due to much higher Pb exposure 10-30 years ago when leaded gasoline was used. Copyright 1999 Academic Press.

Tags: Comparative Study; Female; Human; Male; Support, Non-U.S. Gov't; Support, U.S. Gov't, P.H.S.

Descriptors: \*Aging--Blood--BL; \*Cadmium--Blood--BL; \*Lead--Blood--BL; \*Twins; Aged; Aged, 80 and over; Middle Age; Occupational Exposure; Registries; Sex Factors; Smoking; Sweden

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/6

DIALOG(R) File 155: MEDLINE(R)

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09856484 99196898

Assessment of Pb, Cd, Cu, and Zn exposures of 6- to 10-year-old children in Mumbai.

Raghunath R; Tripathi RM; Kumar AV; Sathe AP; Khandekar RN; Nambi KS  
Environmental Assessment Division, Bhabha Atomic Research Centre, Mumbai,  
400 085, India.

Environmental research (UNITED STATES) Apr 1999, 80 (3) p215-21,  
ISSN 0013-9351 Journal Code: EI2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9906

Subfile: INDEX MEDICUS

Population exposures to toxic trace metals are of great concern due to their nonbiodegradable nature and long biological half-lives for elimination from the body. Response to a toxic metal varies with age group; children are more sensitive and hence more at risk than others. The present study was therefore undertaken on 6- to 10-year-old children residing in various localities of Greater Mumbai and Thane. Blood samples from 566 children residing in 13 locations in Mumbai along with 410 air particulate samples and 64 "duplicate diet" samples were collected for this study. Levels of Pb, Cd, Cu, and Zn in these samples were estimated by differential pulse anodic stripping voltammetric technique. Intake of Pb, Cd, Cu, and Zn for 6- to 10-year-old children through ingestion and inhalation pathways have also been assessed. A correlation coefficient of 0.88 is observed between air lead and blood lead. It is also seen that every microgram increase in the Pb concentration in air ( $m^{-3}$ ) results in 3.56 microg increase in the blood Pb concentration ( $dl^{-1}$ ) in children. Similar correlation, however, was not observed in cases of Cd, Cu, and Zn.

Copyright 1999 Academic Press.

Tags: Comparative Study; Human

Descriptors: \*Air Pollutants, Environmental--Analysis--AN; \*Cadmium--Blood--BL; \*Copper--Blood--BL; \*Lead--Analysis--AN; \*Lead--Blood--BL; \*Zinc--Blood--BL; Air--Analysis--AN; Air--Standards--ST; Cadmium--Analysis--AN; Child; Child Welfare; Copper--Analysis--AN; Diet--Standards--ST; India; Zinc--Analysis--AN

CAS Registry No.: 0 (Air Pollutants, Environmental); 7439-92-1 (Lead)  
; 7440-43-9 (Cadmium); 7440-50-8 (Copper); 7440-66-6 (Zinc)

19/9/7

DIALOG(R)File 155:MEDLINE(R)  
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09835578 99177600

**Blood cadmium concentrations in the general population of Umbria, central Italy.**

dell'Omoo M; Muzi G; Piccinini R; Gambelunghe A; Morucci P; Fiordi T; Ambrogi M; Abbritti G

Institute of Occupational Medicine and Toxicology, University of Perugia, Italy. medlav@umipg.it

Science of the total environment (NETHERLANDS) Feb 2 1999, 226 (1) p57-64, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9906

Subfile: INDEX MEDICUS

The aims of this study were (a) to assess blood cadmium (B-Cd) concentrations and to establish a tentative reference interval; (b) to identify significant determinants of B-Cd, in a population from Umbria, Central Italy, which was not occupationally exposed to cadmium (Cd). Four hundred and thirty-four healthy blood-donors volunteered to answer a questionnaire and provide a blood sample for B-Cd analysis, which was performed by graphite furnace atomic absorption spectrophotometry. Blood Cd concentrations ranged from non-detectable values, i.e. below 0.1 microgram/l up to 3.4 micrograms/l and were not normally distributed. The median values and the 95th percentiles were 0.7 and 2.0 micrograms/l, respectively. Concentrations of B-Cd were more than double in smokers than in non-smokers, median values being 1.1 micrograms/l and 0.5 microgram/l, respectively. In current smokers, B-Cd values correlated with the number of cigarettes smoked daily ( $r_s = 0.40$ ,  $P = 0.0001$ ) and with the cumulative exposure to cigarette smoke ( $r_s = 0.35$ ,  $P = 0.0001$ ). Concentrations of B-Cd correlated with age in the non-smokers, but not in the smokers and were significantly higher in women than in men only in the non-smokers. Both in smokers and non-smokers, B-Cd concentrations were similar in subjects living in urban or in rural areas. In the whole study population the lower and the upper tentative reference limit were < 0.1 and 2.2 micrograms/l, respectively, as computed by a non-parametric rank-based method. The upper limit was approximately double in smokers than in non-smokers (3.1 micrograms/l and 1.6 micrograms/l, respectively). Our results show that B-Cd concentrations in a general population from Umbria are in the range reported for general populations in Northern Italy and other European Countries. Smoking was the strongest determinant of B-Cd concentrations and age had a lesser effect.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Environmental Monitoring--Statistical and Numerical Data--SN; Adolescence; Adult; Age Distribution; Demography; Environmental Exposure--Statistical and Numerical Data--SN; Italy --Epidemiology--EP; Middle Age; Occupational Exposure --Statistical and Numerical Data--SN; Reference Values; Regression Analysis; Sex Distribution; Smoking--Blood--BL

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/8

DIALOG(R)File 155:MEDLINE(R)

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09667912 99033164

alpha-1-Microglobulin: epidemiological indicator for tubular dysfunction induced by cadmium?

Pless-Mulloli T; Boettcher M; Steiner M; Berger J

Department of Epidemiology and Public Health, School of Health Sciences, University of Newcastle upon Tyne, UK.

Occupational and environmental medicine (ENGLAND) Jul 1998, 55 (7)  
p440-5, ISSN 1351-0711 Journal Code: BWC

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9901

Subfile: INDEX MEDICUS

OBJECTIVES: To evaluate the suitability of alpha-1-microglobulin as a marker for cadmium induced renal dysfunction. METHODS: alpha-1-Microglobulin was studied in a cross sectional survey in relation to the body burden of cadmium. Concentrations of alpha-1-microglobulin in 24 h urine of 831 people aged 2-87 years were analysed in association with urinary cadmium excretion, cadmium blood concentration, age, sex, occupational and smoking history, and estimated creatinine clearance. Participants came from a population residentially exposed to cadmium and from two control populations matched for socioeconomic status. RESULTS: The excretion of alpha-1-microglobulin/24 h ranged from 0.1 mg to 176.3 mg and 44.4% of samples showed concentrations near the detection limit. Ordinal logistic regression analysis of people of all ages identified a high risk only for males compared with females (odds ratio (OR) 2.14; 95% confidence interval (95% CI) 1.56 to 2.94), age group, and duration of living on contaminated soil (OR 1.03/year; 95% CI 1.02 to 1.04), but not urinary cadmium excretion (OR 1.30; 95% CI 0.96 to 1.77) as significant predictors. For people < or = 50 years of age a weaker effect of sex (OR 1.76; 95% CI 1.13 to 2.73) and age group and an effect of similar magnitude for the duration of soil exposure (OR 1.03; 95% CI 1.01 to 1.04) were found. Also, the urinary cadmium excretion (OR 2.26; 95% CI 1.38 to 3.70) and occupational exposure (OR 1.71; 95% CI 1.03 to 2.83) were found to be significant in this younger age group. The estimated creatinine clearance had no significant impact on the alpha-1-microglobulin excretion. CONCLUSION: alpha-1-Microglobulin is a suitable marker for early tubular changes only for people < or = 50 years. It may not be sufficiently specific for cadmium, and therefore not a suitable surrogate for cadmium exposure in epidemiological studies.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Alpha-Globulins--Urine--UR; \*Cadmium--Adverse Effects--AE; \*Kidney Diseases--Chemically Induced--CI; \*Kidney Tubules--Drug Effects--DE ; \*Soil Pollutants; Adolescence; Adult; Aged; Aged, 80 and over; Biological Markers--Urine--UR; Cadmium--Blood--BL; Cadmium--Urine--UR; Child; Child, Preschool; Cross-Sectional Studies; Epidemiologic Measurements; Kidney Diseases--Metabolism--ME; Kidney Diseases--Physiopathology--PP; Kidney Tubules--Physiopathology--PP; Middle Age; Regression Analysis; Risk Factors ; Sex Factors; Smoking--Adverse Effects--AE; Time Factors

CAS Registry No.: 0 (alpha(1)-microglobulin); 0 (Alpha-Globulins); 0 (Biological Markers); 0 (Soil Pollutants); 7440-43-9 (Cadmium)

19/9/9

DIALOG(R)File 155: MEDLINE(R)

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09585145 98360281

Urban-rural comparison on cadmium exposure among general populations in Shandong Province, China.

Watanabe T; Zhang ZW; Qu JB; Xu GF; Song LH; Wang JJ; Shimbo S; Nakatsuka H; Higashikawa K; Ikeda M

Miyagi University of Education, Sendai, Japan.

Science of the total environment (NETHERLANDS) Jun 30 1998, 217 (1-2)  
p1-8, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9810

Subfile: INDEX MEDICUS

In 1996, peripheral blood samples and 24-h food duplicate samples together with samples of wheat, rice, foxtail millet and maize were collected from 50 non-smoking women each from Jinan (a provincial capital) and Baiquan (a nearby basically self-sustaining farming village) in China. The samples were analyzed for cadmium (Cd) contents by graphite furnace atomic absorption spectrometry after wet digestion. The dietary Cd intake of the people in the city was 6.4 micrograms/day as a geometric mean (GM) and 5.9 micrograms/day for the villagers. The Cd level in blood was 0.48 and 0.29micrograms/l (as GMs) for the city and village people, respectively. Thus, Cd burden of the people in the city tended to be greater than that for those in the village. Nevertheless, the Cd burden of the Jinan citizens was lower than the values published for people in large cities in China. When Cd intake via the four cereals was compared with Cd in total food to estimate the total contribution of the four cereals (combined) in total dietary Cd intake, the cereals accounted for 60% of total dietary Cd intake among the city people and as high as 78% among the villagers. Cadmium contents in the four cereals were in a narrow range and it was considered acceptable to combine all cereals in evaluating them as dietary Cd sources.

Tags: Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Cereals--Chemistry--CH; \*Environmental Exposure; Adult; China; Diet; Environmental Monitoring; Middle Age

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/10

DIALOG(R) File 155: MEDLINE(R)

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09505429 98153211

Reduced cadmium levels in human kidney cortex in sweden.

Friis L; Petersson L; Edling C

Department of Occupational and Environmental Medicine, University Hospital, Uppsala, Sweden.

Environmental health perspectives (UNITED STATES) Apr 1998, 106 (4)  
p175-8, ISSN 0091-6765 Journal Code: EIO

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9808

Subfile: INDEX MEDICUS

Environmental pollution with the nephrotoxic metal cadmium is considered a potential health risk for the general population. In 1976 it was reported that the cadmium concentration in human kidney cortex in Sweden had increased in parallel with increasing levels in soil and grain during the twentieth century. Since the cadmium concentration in farming lands is still increasing, the present study was undertaken to further elucidate whether the cadmium concentration in the kidney is still increasing. Kidney cortex biopsies were collected at 171 autopsies of victims to sudden and accidental death during 1995 and 1996, and the cadmium concentrations were determined and compared with previously published Swedish data obtained from forensic autopsies. The geometric mean cadmium concentration in kidney cortex in subjects 40 years of age and younger was about 40% of the concentration found in the 1970s, while the reduction was less pronounced among older people. The highest individual concentration of cadmium was 41.5 microg/g wet weight (ww). The geometric mean concentration was less than 14 microg/g ww at ages around 50 years of age, when the cadmium concentration in kidney cortex is highest, as compared with approximately 20 microg/g ww in the 1970s. There was also a reduction in cadmium concentrations among nonsmokers; thus, a decrease in tobacco smoking in Sweden during the last decades is not the only explanation for the reduction of cadmium in the kidney cortex. Other reasons for this reduction could be changes in dietary habits and reduced cadmium contamination from Swedish industries.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Chemistry--CH; \*Kidney Cortex--Chemistry--CH; Adult; Age Factors; Aged; Aged, 80 and over; Cadmium--Blood--BL; Cadmium--Metabolism--ME; Cross-Sectional Studies; Kidney Cortex--Metabolism--ME; Middle Age; Sex Factors; Smoking--Metabolism--ME; Spectrophotometry, Atomic Absorption; Sweden--Epidemiology--EP

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/11

DIALOG(R)File 155:MEDLINE(R)

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09503154 98276335

Effect of cigarette smoking on copper, lead, and cadmium accumulation in human lens.

Cekic O

Department of Ophthalmology, University of Ankara Medical School, Turkey.

British journal of ophthalmology (ENGLAND) Feb 1998, 82 (2) p186-8,

ISSN 0007-1161 Journal Code: AZK

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9808

Subfile: INDEX MEDICUS

AIM: To identify cigarette smoking as a risk factor for development of cataract, to determine the importance of copper, lead, and cadmium in cataractogenesis, and to learn about any relation between those elements.

METHODS: Copper, lead, and cadmium concentrations were measured by atomic absorption spectrophotometry in 37 cataractous and nine normal human lenses. RESULTS: All three element accumulations in lenses with cataract were statistically meaningful. Lenticular copper, lead, and cadmium were increased significantly with cigarette smoking. Cadmium had a positive correlation both with lead and copper in cataractous lenses. CONCLUSION: The accumulation of copper, lead, and cadmium occurs in cataract. The probable source of cadmium in humans is cigarettes. Lenticular cadmium accumulation also increases copper and lead precipitation in the lens. Cigarette smoking might be cataractogenic.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Analysis--AN; \*Cataract--Etiology--ET; \*Copper--Analysis--AN; \*Lead--Analysis--AN; \*Lens, Crystalline--Chemistry--CH; \*Smoking--Adverse Effects--AE; Aged; Case-Control Studies; Middle Age; Risk Factors; Spectrophotometry, Atomic Absorption; Statistics, Nonparametric

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium); 7440-50-8 (Copper)

19/9/12

DIALOG(R)File 155: MEDLINE(R)

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09309733 97475705

**Population-based biomonitoring in the Czech Republic--the system and selected results.**

Cerna M; Spevackova V; Cejchanova M; Benes B; Rossner P; Bavorova H; Ocadlikova D; Smid J; Kubinova R

National Institute of Public Health, Prague, Czech Republic.

Science of the total environment (NETHERLANDS) Oct 1 1997, 204 (3) p263-70, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9801

Subfile: INDEX MEDICUS

In the framework of the system of monitoring the environmental impact on population health, the concentration of lead, cadmium and selenium in blood and cadmium in urine was measured in adults ( $n = 670$ ), children ( $n = 599$ ) and umbilical blood ( $n = 549$ ) using atomic absorption spectrophotometry. Furthermore, cytogenetic analysis of peripheral lymphocytes in all population groups under study was investigated. The median blood Pb level for the overall group of adults (47.8 micrograms/l, i.e. 0.23  $\mu\text{mol}/\text{l}$ ) was significantly higher in men (51.5 micrograms/l, i.e. 0.25  $\mu\text{mol}/\text{l}$ ). Smoking significantly influenced the blood Pb level in women. The 90th percentile in no group exceeded the value of 100 micrograms/l (0.48  $\mu\text{mol}/\text{l}$ ). The median blood Cd level in adults (0.9 microgram/l, i.e. 0.008  $\mu\text{mol}/\text{l}$ ) depends on smoking habit (1.25 micrograms/l, i.e. 0.01  $\mu\text{mol}/\text{l}$ ). The median urine Cd level was 0.585 microgram/g creatinine (0.59  $\mu\text{mol}/\text{mole creatinine}$ ) in adults and 0.37 microgram/g creatinine (0.37  $\mu\text{mol}/\text{mole creatinine}$ ) in children. The median blood Se level (53.5 micrograms/l, i.e. 0.68  $\mu\text{mol}/\text{l}$ ) was found to be higher in the group of non-smokers (57.5 micrograms/l, i.e. 0.73  $\mu\text{mol}/\text{l}$ ). Lead and selenium level were significantly lower in the umbilical blood. Cytogenetic analysis results showed age-dependent average percentages of aberrant cells: 1.1% in umbilical blood, 1.27% in children and 1.71 in adults in line with the reference values for the Czech population.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Environmental Monitoring; \*Lead--Blood --BL; \*Population Surveillance; \*Selenium--Blood--BL; Adult; Age Factors; Cadmium--Urine--UR; Child; Chromosome Aberrations--Genetics--GE; Czech Republic; Data Interpretation, Statistical; Public Health--Standards--ST; Sex Factors; T-Lymphocytes--Ultrastructure--UL; Umbilical Cord

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium); 7782-49-2 (Selenium)

19/9/13

DIALOG(R) File 155.MEDLINE(R)

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09301215 97479666

Cadmium and selenium in blood and urine related to smoking habits and previous exposure to mercury vapour.

Ellingsen DG; Thomassen Y; Aaseth J; Alexander J  
Department of Occupational and Environmental Medicine, Telemark Central Hospital, Skien, Norway.

Journal of applied toxicology (ENGLAND) Sep-Oct 1997, 17 (5) p337-43,  
ISSN 0260-437X Journal Code: H93

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9801

Subfile: INDEX MEDICUS

The object of this work was to investigate possible interactions of mercury, cadmium and selenium in humans. Selenium and cadmium in blood and urine were determined in this cross-sectional study of 130 males, of whom 77 had been previously exposed to mercury vapour at a chloralkali plant. Of the participants, 61.5% were smokers and 16.2% were never-smokers. The concentration of selenium in blood (B-Se) was significantly lower in subjects currently smoking more than 50 g of tobacco per week compared to never-smokers, whereas the concentration of cadmium in blood (B-Cd) was significantly higher in all categories of current smokers. In the multiple linear regression analysis, B-Se as a dependent variable was negatively associated with B-Cd, whereas current smoking habits were not included in the model as a predictor variable. In contrast, B-Cd as a dependent variable was positively associated with current as well as previous smoking habits, and negatively with both B-Se and the 'cumulative dose' of previous mercury vapour exposure. The concentration of selenium in blood was also negatively associated with B-Cd in the group of never-smokers (Spearman's  $r = -0.80$ ;  $P < 0.001$ ). In conclusion, these results suggest a depressive effect of cadmium on the concentration of selenium in blood, while smoking alone did not operate as a true predictor for this effect. Furthermore, previous exposure to mercury apparently modifies the concentration of cadmium in blood.

Tags: Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Cadmium--Urine--UR; \*Mercury--Adverse Effects--AE; \*Selenium--Blood--BL; \*Selenium--Urine--UR; \*Smoking--Adverse Effects--AE; Adult; Cross-Sectional Studies; Life Style; Middle Age; Occupational Exposure; Regression Analysis

CAS Registry No.: 7439-97-6 (Mercury); 7440-43-9 (Cadmium); 7782-49-2 (Selenium)

19/9/14

DIALOG(R) File 155: MEDLINE(R)

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09214341 97358877

Critical evaluation and review of cadmium concentrations in blood for use in occupational health according to the TRACY protocol.

Herber RF; Christensen JM; Sabbioni E

Coronel Laboratory for Occupational and Environmental Health, Academic Medical Center, Amsterdam, Netherlands. R.F.Herber@amc.uva.nl

International archives of occupational and environmental health (GERMANY)

1997, 69 (6) p372-8, ISSN 0340-0131 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE; REVIEW; REVIEW, TUTORIAL

JOURNAL ANNOUNCEMENT: 9711

Subfile: INDEX MEDICUS

Cadmium in blood (B-Cd) may be used to assess recent exposure to cadmium in the working or general environment. In a paper published elsewhere pooled reference values using meta-analysis of B-Cd values in general-population studies were calculated. In the present study tentative references intervals were described which can be used for comparison with data from occupationally exposed groups or individuals. The selection of studies was done according to criteria as published by the international project TRACY. For this purpose, 800 publications covering the period 1983-1992 were reviewed on their suitability for establishing tentative reference intervals. From these 800 publications, four finally met the selection criteria. Most important criteria for selection were the check for contamination during sampling of the blood, the storage and pretreatment procedures, and the existence of internal and external quality control programs. Also, stratifications into sex, smoking habits and occupation were important selection criteria. It turned out that for non-smoking white-collar workers in the age range of 19-65 years, B-Cd values were below 0.8 micrograms/l for most areas. All other groups within this age group, e.g., white collar workers in Japan, blue-collar workers, and smokers tend to have higher B-Cd values in these sequences. Blue-collar workers not clearly exposed to Cd have higher values than white-collar workers, indicating still some minor exposure. It is not clear if this small exposure has an occupational or lifestyle (e.g., diet) origin. Geographical regions also show an influence on B-Cd levels, e.g., values in Japan are higher than elsewhere. This influence may be due to differences in diet. The conclusion will be that reference values for B-Cd in fact are area-dependent. (26 Refs.)

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Cadmium Poisoning--Blood--BL; \*Environmental Monitoring--Methods--MT; \*Environmental Monitoring --Standards--ST; \*Occupational Exposure; \*Occupational Health; Adult; Aged; Bias (Epidemiology); Case-Control Studies; Clinical Protocols; Confounding Factors (Epidemiology); Middle Age; Reference Values; Reproducibility of Results; Residence Characteristics

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/15

DIALOG(R)File 155: MEDLINE(R)

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09207781 97283926

Background exposure of urban populations to lead and cadmium: comparison between China and Japan.

Zhang ZW; Moon CS; Watanabe T; Shimbo S; He FS; Wu YQ; Zhou SF; Su DM; Qu JB; Ikeda M

Department of Public Health, Kyoto University Faculty of Medicine, Japan.  
International archives of occupational and environmental health (GERMANY)

1997, 69 (4) p273-81, ISSN 0340-0131 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9710

Subfile: INDEX MEDICUS

**OBJECTIVES:** To assess and compare the background exposure of the general population to lead (Pb) and cadmium (Cd) in China and in Japan. **METHODS:** Food duplicates and peripheral blood samples were collected from nonoccupationally exposed subjects, viz 202 Chinese women in four Chinese cities (Beijing, Shanghai, Nanning, and Tainan) and 72 Japanese women in three Japanese cities (Tokyo, Kyoto, and Sendai) in the years 1993-1995. Wet-ashing and graphite furnace atomic absorption spectrometric methods were used for the determination of Pb and Cd levels in food and blood samples. **RESULTS:** Geometric mean (GM) dietary Pb intake (25.8 micrograms/day) and the GM Pb concentration in blood (56.7 micrograms/l) in Chinese were significantly higher than in Japanese women (11.6 micrograms/day in food and 32.1 micrograms/l in blood), whereas Cd in food (32.1 micrograms/day) and Cd in blood (1.92 micrograms/l) in Japanese were significantly higher than in Chinese women (9.9 micrograms/day in food and 1.07 micrograms/l in blood). The intake of Pb and Cd via boiled rice accounted for 3.6% and 31.1% of the total dietary burden in Chinese, and 12.1% and 32.7% in Japanese, respectively. The Cd burden was acquired almost exclusively through the dietary route, whereas the Pb burden came from both air and food, especially in the case of the Chinese population. **CONCLUSIONS:** The background Pb exposure in the Chinese population was higher than that in the Japanese population, whereas Cd exposure was lower in Chinese women than in their Japanese counterparts.

Tags: Comparative Study; Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Air Pollutants--Metabolism--ME; \*Cadmium--Blood--BL; \*Environmental Exposure; \*Lead--Blood--BL; \*Urban Population; Body Burden; Cadmium Poisoning--Blood--BL; Cadmium Poisoning--Epidemiology--EP; China --Epidemiology--EP; Eating; Food; Japan--Epidemiology--EP; Lead Poisoning --Blood--BL; Lead Poisoning--Epidemiology--EP; Rice--Chemistry--CH

CAS Registry No.: 0 (Air Pollutants); 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/16

DIALOG(R) File 155: MEDLINE(R)

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09141664 97312616

High blood cadmium levels are not associated with consumption of traditional food among the Inuit of Nunavik.

Rey M; Turcotte F; Lapointe C; Dewailly E

Divisio de Epidemiologia, Instituto Nacional de Cancerología, Santa Fe de Bogota, Colombia.

Journal of toxicology and environmental health (UNITED STATES) May 1997

, 51 (1) p5-14, ISSN 0098-4108 Journal Code: KAA

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9708

Subfile: INDEX MEDICUS

High levels of cadmium in the liver and kidneys of caribous and sea mammals of the Canadian Arctic have led to recommendations to remove such offal from the traditional diet. Blood cadmium levels have been found to be very high in samples of Inuit volunteers, hence the hypothesis that the Inuit might be exposed to cadmium through their diet. This survey of a population-based random sample of Nunavik residents ( $n = 518$ ) confirms that blood cadmium of Inuit is indeed very high by comparison to published reports. Blood cadmium levels are closely associated with the current smoking status and are independent of dietary patterns among nonsmokers. Plasma omega-3 fatty acids concentrations have been used to assess the reliability of the dietary information collected by questionnaires and to test for any association of blood cadmium with the consumption of sea mammals. Blood cadmium levels are not related to the reported consumption of sea mammals. Blood cadmium levels are very high among smokers and are associated with levels of exposure to tobacco. Among nonsmoking Inuit, blood cadmium levels are comparable with those reported in nonsmokers elsewhere in the world. In reference to international standards, blood cadmium concentrations are high enough among the Inuit to warrant energetic public health interventions.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Eskimos; \*Food Habits; Adolescence; Adult; Aged; Diet; Fatty Acids, Omega-3--Blood--BL; Health Surveys; Meat; Middle Age; Quebec; Questionnaires; Reproducibility of Results; Smoking

CAS Registry No.: 0 (Fatty Acids, Omega-3); 7440-43-9 (Cadmium)

19/9/17

DIALOG(R)File 155:MEDLINE(R)

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09109749 97248823

Blood cadmium, game consumption and tobacco smoking in southern Ontario anglers and hunters.

Cole DC; Kearney JP

Environmental Health Program, McMaster University, Hamilton, ON.

Canadian journal of public health. Revue canadienne de sante publique (CANADA) Jan-Feb 1997, 88 (1) p44-6, ISSN 0008-4263 Journal Code: CK6

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9707

Subfile: INDEX MEDICUS

Tags: Animal; Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Food Habits; \*Smoking--Blood--BL;

Animals, Wild; Deer; Environmental Exposure; Environmental Pollutants --Adverse Effects--AE; Fishes; Ontario; Questionnaires; Reindeer

CAS Registry No.: 0 (Environmental Pollutants); 7440-43-9 (Cadmium)

19/9/18

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

09103084 97250431

Cadmium levels in maternal, cord and newborn blood in Mexico City.  
Galicia-Garcia V; Rojas-Lopez M; Rojas R; Olaiz G; Rios C  
Department of Neurochemistry, National Institute of Neurology and  
Neurosurgery, Manuel Velasco Suarez, Mexico City, Mexico.  
Toxicology letters (NETHERLANDS) Mar 14 1997, 91 (1) p57-61, ISSN  
0378-4274 Journal Code: VKN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9707

Subfile: INDEX MEDICUS

Blood samples were withdrawn from n = 49 mothers and their children at the moment of birth to assess blood cadmium levels of the mother, the newborn and the cord. A questionnaire was applied to the mothers in order to obtain data about possible sources of cadmium exposure. Maternal blood cadmium was found significantly correlated ( $r^2 = 0.578$ ) with cord blood cadmium levels, while cord blood was correlated ( $r^2 = 0.499$ ) with newborn blood cadmium. Nevertheless, maternal blood cadmium and newborn blood cadmium were not correlated at all ( $r^2 = 0.047$ ). Previous smoking habits of the mother increased maternal blood cadmium concentrations significantly, but it did not modify cadmium concentrations of either the cord or the newborn. The latter result suggests the existence of a placental barrier for cadmium. Birthweight was found to be inversely associated ( $P < 0.06$ ) only with cord blood cadmium levels. The results of the study suggest that cord blood cadmium holds information about both maternal and newborn cadmium status and also about cadmium effects on birthweight.

Tags: Female; Human

Descriptors: \*Cadmium--Blood--BL; \*Fetal Blood--Chemistry--CH;  
Adolescence; Adult; Analysis of Variance; Birth Weight--Drug Effects--DE;  
Cadmium--Metabolism--ME; Cadmium Poisoning--Blood--BL; Infant, Newborn;  
Mexico; Placenta--Metabolism--ME; Pregnancy; Prenatal Exposure Delayed  
Effects; Questionnaires; Regression Analysis; Smoking; Software

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/19

DIALOG(R)File 155:MEDLINE(R)

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09062074 97113096

Lead and cadmium content in human milk from the Northern Adriatic area of Croatia.

Frkovic A; Kras M; Alebic-Juretic A

Rijeka Clinical Hospital, Kresimirova 42, 51000 Rijeka, Croatia.

Bulletin of environmental contamination and toxicology (UNITED STATES)

Jan 1997, 58 (1) p16-21, ISSN 0007-4861 Journal Code: BFN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9704

Subfile: INDEX MEDICUS

Tags: Female; Human

Descriptors: \*Cadmium--Analysis--AN; \*Lead--Analysis--AN; \*Milk, Human  
--Chemistry--CH; Adult; Age Factors; Croatia; Smoking--Metabolism--ME  
CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/20

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

08979051 97133154

**Biological monitoring of exposure to cadmium, a human carcinogen, as a result of active and passive smoking.**

Shaham J; Meltzer A; Ashkenazi R; Ribak J  
Occupational Cancer Unit, Occupational Health & Rehabilitation Institute,  
Raanana, Israel.

Journal of occupational and environmental medicine (UNITED STATES) Dec  
1996, 38 (12) p1220-8, ISSN 1076-2752 Journal Code: B7H

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9707

Subfile: INDEX MEDICUS

Cadmium (Cd), a known human carcinogen, is one of the components of tobacco and also has many industrial uses. Smoking Cd-contaminated cigarettes at work may cause an increase in blood levels and toxicity of Cd. For a population of nonexposed workers, we compared blood Cd and urine cotinine (Cot) levels as biological markers of exposure to cigarette smoke of active smokers (AS) and passive smokers (PS) with those of unexposed nonsmokers (UNS) in 158 workers. The mean Cd in AS (0.097 microgram%); ie, 0.097 microgram/100 mL whole blood) was significantly higher than in UNS (0.085 microgram%), and was very close to the mean Cd levels in PS (0.093 microgram%). Mean Cd levels in exposed past smokers (0.105 microgram%) was higher than in nonexposed past smokers ( $P < 0.05$ ) and in AS. The mean Cot level was significantly higher in AS than in PS or in UNS. Increased smoking was associated directly with increased blood Cd and urine Cot. Our results supported and proved quantitatively that exposure to cigarette smoke is harmful to both AS and PS, as we show that in both cases there is an increase in blood Cd. According to our results, exposure to cigarette smoke via active and passive smoking increases blood Cd by an average of 0.01 micrograms% over the background (UNS). We conclude that exposure to cigarette smoke is a confounder to be taken into account when carrying out epidemiological studies and surveillance programs on workers exposed to Cd at work.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Environmental Monitoring--Methods --MT; \*Occupational Exposure--Analysis--AN; \*Smoking--Blood--BL; \*Tobacco Smoke Pollution--Analysis--AN; Biological Markers; Case-Control Studies; Confounding Factors (Epidemiology); Cotinine--Analysis--AN; Linear Models; Smoking--Adverse Effects--AE; Tobacco Smoke Pollution--Adverse Effects--AE

CAS Registry No.: 0 (Biological Markers); 486-56-6 (Cotinine); 7440-43-9 (Cadmium)

19/9/21

DIALOG(R)File 155:MEDLINE(R)

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08978679 97176229

Assessing the risk from environmental cadmium exposure.

Wood AL

North Birmingham Health Authority, Birmingham Communicable Disease Unit.

Journal of public health medicine (ENGLAND) Dec 1996, 18 (4) p432-6,

ISSN 0957-4832 Journal Code: AP2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9707

Subfile: INDEX MEDICUS

BACKGROUND: Previous soil surveys by Environmental Health Officers had found high soil cadmium (Cd) concentrations in gardens next to a battery factory in Worcestershire. This study was set up to determine whether this had resulted in high Cd levels in the blood and urine of local residents. METHODS: A sample of residents (n = 39) living next to the factory were matched by age and sex to employees of North Worcestershire Health Authority. A questionnaire was used to determine potential Cd exposure. The levels of Cd in blood, urine and garden soil were measured. RESULTS: None of the members of the study group had a blood or urine Cd concentration above the levels estimated to cause harm. Only one member of the comparison group, but all members of the study group, had soil in their gardens with a Cd concentration above the recommended level. Adjusting for smoking status and other confounders by using logistic regressional analysis showed that being in the study group did not confer a greater risk of having an elevated blood or urine Cd concentration. The greatest influence on Cd concentrations was a current smoking habit. CONCLUSIONS: No evidence was found to show that the high soil cadmium concentrations had adversely affected the health of local residents. Specific issues raised during the implementation of this study were the resource implications of assessing environmental exposure and the difficulties in recruiting the study group. Health Authorities and local government need to be fully aware of similar problems they might encounter before investigating a potential environmental health hazard.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Adverse Effects--AE; \*Environmental Exposure --Adverse Effects--AE; Adult; Cadmium--Analysis--AN; Cadmium--Blood--BL; Cadmium--Urine--UR; Cross-Sectional Studies; Environmental Health; Middle Age; Regression Analysis; Risk Factors; Smoking--Adverse Effects--AE; Soil Pollutants--Analysis--AN

CAS Registry No.: 0 (Soil Pollutants); 7440-43-9 (Cadmium)

19/9/22

DIALOG(R) File 155: MEDLINE(R)

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08621153 96106215

Background exposure of general population to cadmium and lead in Tainan city, Taiwan.

Ikeda M; Zhang ZW; Moon CS; Imai Y; Watanabe T; Shimbo S; Ma WC; Lee CC; Guo YL

Department of Public Health, Kyoto University Faculty of Medicine, Japan.

Archives of environmental contamination and toxicology (UNITED STATES)

Jan 1996, 30 (1) p121-6, ISSN 0090-4341 Journal Code: 6YD

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9605

Subfile: INDEX MEDICUS

Venous blood samples, 24-h total food duplicate samples, and rice samples were collected from 52 adult non-smoking women in the city of Tainan, southern Taiwan, in 1994, and analyzed for cadmium (Cd) and lead (Pb) by wet-digestion followed by graphite furnace atomic absorption spectrophotometry. Daily dietary intake was 10 micrograms for Cd and 22 micrograms for Pb as geometric means, of which Cd and Pb in rice accounted for 34% and 1.4% of daily Cd and Pb intakes, respectively. The counterpart values for blood were 1.11 ng/ml and 44.5 ng/ml for Cd and Pb, respectively. International comparison with recently published data suggests that the exposure to Cd in Tainan should be among the lowest in the world.

Tags: Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Environmental Exposure; \*Lead--Blood--BL; \*Rice--Chemistry--CH; Adult; Aged; Analysis of Variance; Blood Chemical Analysis; Cadmium--Metabolism--ME; Cohort Studies; Food Analysis; Food Contamination; Lead--Metabolism--ME; Middle Age; Spectrophotometry, Atomic Absorption; Taiwan

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/23

DIALOG(R)File 155:MEDLINE(R)

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08512516 96187317

Concentrations of cadmium and lead in renal cell cancer.

Ala-Opas M; Tahvonen R

Division of Urology, University Hospital of Kuopio, Finland.

Journal of trace elements in medicine and biology (GERMANY) Oct 1995,

9 (3) p176-80, ISSN 0946-672X Journal Code: B7Q

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9607

Subfile: INDEX MEDICUS

The incidence of renal cancer increased during the 1980's in Finland. The influence of environmental factors on carcinogenesis has been discussed in recent years. We determined the concentrations of cadmium and lead in renal tissue in 13 renal cancer patients. The mean concentration of cadmium for women was 9430 micrograms/kg (range 3437-13,962 micrograms/kg) and for male patients 14,702 micrograms/kg (range 3263-21,272 micrograms/kg). The mean concentration of lead for women was 73 micrograms/kg (range 41-105 micrograms/kg) and for male patients 96 micrograms/kg (range 34-106 micrograms/kg). Our results showed that the mean concentrations of cadmium and lead were low in the renal cortex of renal cell cancer patients.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Analysis--AN; \*Carcinoma, Renal Cell--Metabolism--ME; \*Kidney Cortex--Chemistry--CH; \*Kidney Neoplasms--Metabolism--ME; \*Lead--Analysis--AN; Adult; Aged; Carcinoma, Renal Cell--Epidemiology--EP; Environmental Exposure; Finland--Epidemiology--EP; Incidence; Kidney Neoplasms--Epidemiology--EP; Middle Age; Pilot Projects; Quality Control; Smoking--Metabolism--ME; Spectrophotometry, Atomic Absorption

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/24

DIALOG(R)File 155:MEDLINE(R)

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08449570 96038459

The adverse effects of tobacco smoking on reproduction and health: a review from the literature.

Tuormaa TE

Nutrition and health (ENGLAND) 1995, 10 (2) p105-20, ISSN 0260-1060

Journal Code: OBI

Languages: ENGLISH

Document type: JOURNAL ARTICLE; REVIEW; REVIEW LITERATURE

JOURNAL ANNOUNCEMENT: 9603

Subfile: INDEX MEDICUS

This paper compromises a short literary review of the adverse consequences of tobacco smoking on reproduction, as well as on infant and adult health. Furthermore, attention is drawn to the bad effects of smoking on the nutritional status. (155 Refs.)

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Reproduction--Drug Effects--DE; \*Smoking--Adverse Effects--AE; Adult; Cadmium--Adverse Effects--AE; Cadmium--Blood--BL; Child, Preschool; Fertility--Drug Effects--DE; Fetus--Drug Effects--DE; Infant; Infant, Newborn; Pregnancy; Prenatal Exposure Delayed Effects; Smoking--Blood--BL; Tobacco Smoke Pollution--Adverse Effects--AE

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/25  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

08296080 95273943

Trace element reference values in tissues from inhabitants of the European Union. IX. Harmonization of statistical treatment: blood cadmium in Italian subjects.

Roggi C; Sabbioni E; Minoia C; Ronchi A; Gatti A; Hansen B; Silva S; Maccarini L

Dipartimento di Medicina Preventiva, Occupazionale e di Comunita, Universita di Pavia, Italy.

Science of the total environment (NETHERLANDS) Apr 21 1995, 166 p235-43, ISSN 0048-9697 Journal Code: UU0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9508

Subfile: INDEX MEDICUS

Obtaining reliable trace element reference values in tissues and fluids from inhabitants of the European Union relies on the availability of standardized and harmonized protocols for the statistical treatment of the data on trace element levels in general European populations. In this context, cadmium was measured in the blood (BCd) of 514 Italian inhabitants from the Lombardy region and the results statistically treated and presented according to a procedure which includes: simple descriptive statistics and graphical analysis such as stem and leaf and box-plot representations (average BCd levels were 0.62 microgram/l; geometric mean, 0.51 microgram/l; median, 0.50 microgram/l; mode, 0.30 microgram/l; 95th percentile, 1.48 micrograms/l; 5th percentile, 0.20 microgram/l); p-p plot, Shapiro-Wilk and Lilliefors tests for normality (the distribution of the data is closer to the log-normal distribution and inconsistent with the hypothesis of normality); analysis of variance (BCd increases from 20 to about 60 years and then decreases; it is influenced by smoking but not by body mass and alcohol consumption and it is higher in men than in women); and step wise multiple regression analysis (BCd is influenced by the number of cigarettes/day and the total dose of exposure, cigarettes/day multiplied by smoking years). Tentative reference intervals for BCd based on the log transformation of the data are 0.14-1.82 micrograms Cd/l (whole population); 0.16-1.94 micrograms Cd/l (male) and 0.13-1.66 micrograms Cd/l (female); 0.24-2.68 micrograms Cd/l (smokers); and 0.14-1.27 micrograms Cd/l (non-smokers).

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; Adult; Age Factors; Aged; Analysis of Variance; Environmental Pollutants--Blood--BL; Italy; Middle Age; Reference Values; Regression Analysis; Sex Factors; Smoking--Blood--BL

CAS Registry No.: 0 (Environmental Pollutants); 7440-43-9 (Cadmium)

19/9/26

DIALOG(R) File 155: MEDLINE(R)

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08296078 95273941

Lead and cadmium levels in human milk and blood.

Hallen IP; Jorhem L; Lagerkvist BJ; Oskarsson A

Toxicology Division Swedish National Food Administration, Uppsala.

Science of the total environment (NETHERLANDS) Apr 21 1995, 166  
p149-55, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9508

Subfile: INDEX MEDICUS

Lead and cadmium levels were determined (with AAS) in blood and milk obtained at 6 weeks after delivery from women living in the vicinity of a copper and lead metal smelter and in a control area. Analysis of lead and cadmium were also performed in blood samples obtained at delivery. Accuracy of the analysis was confirmed by the analysis of quality control samples. In general, blood and milk levels of lead and cadmium were low in both areas. At 6 weeks after delivery the lead levels in blood and milk were  $32 \pm 8$  and  $0.7 \pm 0.4$  micrograms Pb/l, respectively (total mean  $\pm$  S.D., n = 75). Cadmium levels in blood and milk were  $0.9 \pm 0.3$  and  $0.06 \pm 0.04$  microgram Cd/l, respectively (n = 75). At delivery the lead levels in blood of women in the smelter area were higher, 38.7 micrograms Pb/l, than the blood lead levels in women from the control area, 32.3 micrograms Pb/l, ( $P < 0.001$ ). At 6 weeks after delivery there was no difference in blood lead levels between the two groups. In contrast, the lead levels in milk were higher in women from the smelter area, 0.9 microgram Pb/l, than in women from the control area, 0.5 microgram Pb/l, ( $P < 0.001$ ). No differences in blood cadmium levels were found between the two groups. Milk cadmium levels in women from the control area, 0.07 microgram Cd/l, were somewhat higher ( $P < 0.01$ ) than in women from the smelter area, 0.05 microgram Cd/l. (ABSTRACT TRUNCATED AT 250 WORDS)

Tags: Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Pharmacokinetics--PK; \*Environmental Pollutants --Pharmacokinetics--PK; \*Lead--Pharmacokinetics--PK; \*Milk, Human --Chemistry--CH; Analysis of Variance; Cadmium--Blood--BL; Chemical Industry; Environmental Pollutants--Blood--BL; Food Habits; Lactation; Lead --Blood--BL; Questionnaires; Smoking--Metabolism--ME; Spectrophotometry, Atomic Absorption; Sweden

CAS Registry No.: 0 (Environmental Pollutants); 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/27

DIALOG(R)File 155:MEDLINE(R)

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08289873 95263954

Effect of prior, low-level cadmium exposure in vivo on metallothionein expression in cultured lymphocytes.

Stennard FA; Stewart TC; West AK

Department of Biochemistry, University of Tasmania, Hobart, Australia.

Journal of applied toxicology (ENGLAND) Jan-Feb 1995, 15 (1) p63-7,

ISSN 0260-437X Journal Code: H93

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9508

Subfile: INDEX MEDICUS

Exposure to cadmium (Cd) is currently monitored by measurement of the metal in blood or urine, or by observation of excreted compounds such as beta 2-microglobulin or N-acetyl-beta-D-glucosamine. Whilst these approaches are useful for the detection of acute exposure to Cd, their applicability in the management of long-term, low-level exposure is less clear. Metallothioneins are ubiquitous proteins that are synthesized in response to heavy metal ions and may offer themselves as being a biologically sensitive indicator of Cd exposure. We have examined both basal and Cd-induced metallothionein mRNA levels in cultured lymphocytes from groups with different exposures to Cd, attempting to assess their potential as an indicator of Cd exposure and the suitability of such an assay for routine analysis. We found that induced metallothionein mRNA levels, rather than basal mRNA levels, increased in groups known to have received elevated body burdens of Cd, although these increases were not significant between groups. There was, however, a significant correlation between induced metallothionein mRNA levels and urinary beta 2-microglobulin. These results suggest that further work on the in vitro lymphocyte response to Cd as a diagnostic tool is warranted.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Adverse Effects--AE; \*Lymphocytes--Drug Effects --DE; \*Metallothionein--Biosynthesis--BI; beta 2-Microglobulin--Urine--UR; Adult; Autoradiography; Blotting, Northern; Cadmium--Blood--BL; Cadmium --Urine--UR; Cells, Cultured; Gene Expression Regulation; Lymphocytes --Metabolism--ME; Metallothionein--Genetics--GE; Metallurgy; Middle Age; Nucleic Acid Hybridization; Occupational Exposure; RNA, Messenger --Metabolism--ME; Smoking--Adverse Effects--AE

CAS Registry No.: 0 (beta 2-Microglobulin); 0 (RNA, Messenger); 7440-43-9 (Cadmium); 9038-94-2 (Metallothionein)

19/9/28

DIALOG(R)File 155: MEDLINE(R)  
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08257657 95199684

Association of blood cadmium to the area of residence and hypertensive disease in Arctic Finland.

Luoma PV; Nayha S; Pyy L; Hassi J

Regional Institute of Occupational Health in Oulu, Finland.

Science of the total environment (NETHERLANDS) Jan 15 1995, 160-161 p571-5, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9506

Subfile: INDEX MEDICUS

The association of cadmium exposure with area of residence, blood pressure, and arterial hypertensive disease was examined in 230 reindeer herders in northernmost arctic Finland. Blood cadmium concentration averaged 10.0 nmol/l, and was three times higher in smokers than in nonsmokers (16.7 vs. 5.5 nmol/l). Concentrations increased from the southwestern to the northeastern area west of the Kola Peninsula, Russia, both in nonsmokers (3.1 vs. 6.8 nmol/l) and smokers (10.8 vs. 32.0 nmol/l). High cadmium levels were most common in the northeast: 32% of the values were at least 15 nmol/l, 10% at least 45 nmol/l (health-based limit of WHO), and 3% at least 90 nmol/l (the critical limit for renal damage). High cadmium concentration was associated with a rise in blood pressure; the rise was particularly pronounced in subjects with hypertensive diseases. These associations were not affected by age, body mass index, smoking, and alcohol consumption. The results suggest that cadmium exposure may have harmful health effects in arctic Finland and emphasize the importance of reducing pollution from industrial sources in the Kola Peninsula.

Tags: Human; Male

Descriptors: \*Cadmium--Adverse Effects--AE; \*Cadmium--Blood--BL; \*Environmental Pollutants--Adverse Effects--AE; \*Environmental Pollutants --Blood--BL; \*Hypertension--Epidemiology--EP; Adult; Aged; Aged, 80 and over; Arctic Regions--Epidemiology--EP; Finland--Epidemiology--EP; Hypertension--Chemically Induced--CI; Middle Age; Smoking--Adverse Effects --AE

CAS Registry No.: 0 (Environmental Pollutants); 7440-43-9 (Cadmium)

19/9/29

DIALOG(R) File 155: MEDLINE(R)

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08200080 94198558

Cadmium in blood in Alzheimer's disease and non-demented subjects: results from a population-based study.

Basun H; Lind B; Nordberg M; Nordstrom M; Bjorksten KS; Winblad B  
Karolinska Institutet, Department of Geriatric Medicine, Huddinge University Hospital, Sweden.

Biometals (ENGLAND) Apr 1994, 7 (2) p130-4, ISSN 0966-0844

Journal Code: BID

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9407

Subfile: INDEX MEDICUS

Blood cadmium concentrations were studied in Alzheimer's disease (AD) and non-demented subjects. The 29 individuals were randomized from the ongoing population survey on ageing and dementia in Stockholm, the Kungsholmen Project. Smokers had, as expected, higher cadmium levels than non-smokers. Cadmium concentrations in blood were related to diastolic blood pressure in non-smoking, non-demented individuals. In contrast to previous reports no differences in blood cadmium levels were found between AD sufferers and non-demented subjects. Furthermore, there were no correlations between cadmium levels in blood and age or cognitive functions. The importance of quality assurance in sample collection and analysis of cadmium as well as scrutinizing smoking habits is emphasized.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Aging--Blood--BL; \*Alzheimer Disease--Blood--BL; \*Cadmium--Blood--BL; Aged; Aged, 80 and over; Alzheimer Disease--Physiopathology--PP; Blood Pressure; Creatinine--Blood--BL; Dementia--Blood--BL; Dementia--Physiopathology--PP; Serum Albumin--Analysis--AN; Smoking--Blood--BL; Vitamin B 12--Blood--BL

CAS Registry No.: 0 (Serum Albumin); 60-27-5 (Creatinine); 68-19-9 (Vitamin B 12); 7440-43-9 (Cadmium)

19/9/30

DIALOG(R)File 155:MEDLINE(R)

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08153573 95322840

Cadmium concentration in the renal cortex of kidney tumor patients and controls.

Muller I; Helmers E; Barchet R; Schweinsberg F  
Katharinenhospital, Stuttgart, Fed. Rep. of Germany.

Journal of trace elements and electrolytes in health and disease (GERMANY)  
) Dec 1994, 8 (3-4) p173-6, ISSN 0931-2838 Journal Code: BJQ

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9510

Subfile: INDEX MEDICUS

In this pilot study the concentration of cadmium was determined quantitatively in samples of renal cortex of 22 kidney cancer patients and 19 controls. Data on the three main sources of exposure to cadmium-diet, cigarette smoking and occupation-were obtained through interviews. No significant difference in Cd concentration between the tumor samples and the controls could be found. The mean Cd concentration was 50.9 +/- 25 mg/kg dry weight for cancer patients and 55.2 +/- 50 mg/kg for controls. Further, it was established that the age-dependent relationship for cadmium in the cortex was not valid for smokers.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Metabolism--ME; \*Carcinoma, Renal Cell--Metabolism--ME; \*Kidney Cortex--Metabolism--ME; \*Kidney Neoplasms--Metabolism--ME; Adult; Aged; Aged, 80 and over; Cadmium--Blood--BL; Cadmium--Urine--UR; Case-Control Studies; Diet; Interviews; Middle Age; Occupational Exposure; Pilot Projects; Smoking--Metabolism--ME

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/31  
DIALOG(R) File 155: MEDLINE(R)  
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08094672 95120027

Effect of cadmium and cigarette smoking on human semen quality.

Chia SE; Xu B; Ong CN; Tsakok FM; Lee ST

Department of Community, Occupational & Family Medicine, National University of Singapore.

International journal of fertility and menopausal studies (UNITED STATES)  
Sep-Oct 1994, 39 (5) p292-8, ISSN 1069-3130 Journal Code: BSJ

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9504

Subfile: INDEX MEDICUS

OBJECTIVE--In recent years, there have been many nonconclusive studies on cigarette smoking and sperm quality. Few studies, if any, have attempted to implicate any decrease of sperm quality. The aim of this study was to examine the relationship between cigarette smoking, blood and seminal plasma concentrations of cadmium and lead, and sperm quality. METHODS--A total of 184 males who were undergoing initial screening for infertility were included in the study. Tests conducted included semen characteristics (volume, total sperm count, sperm viability, motility and morphology of spermatozoa), and blood and seminal plasma concentrations of lead and cadmium. RESULTS--More than 50% and 70% of the subjects had normal sperm density and motility, respectively. The mean concentrations of lead in blood (PbB) and seminal plasma (PbS) were 7.09 micrograms/dL and 12.98 micrograms/L, respectively, while the mean concentrations of cadmium in blood (CdB) and seminal plasma (CdS) were 0.95 micrograms/L, and 0.58 micrograms/L, respectively. Significant correlations were observed between CdB and cigarette-years and sperm density (negative). CdS was significantly correlated with cigarette-years and sperm volume (negative). Significant trends were observed for different categories of cigarette-years with CdB, CdS and sperm density. CONCLUSION--Cigarette smoking appears to affect sperm density, especially in heavy smokers. Cadmium (present) in cigarettes could be a possible causative agent for the low sperm density among smokers.

Tags: Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Semen--Physiology--PH; \*Smoking --Physiopathology--PP; \*Spermatozoa--Physiology--PH; Adult; Alcohol Drinking; Cadmium--Blood--BL; Cell Survival; Infertility, Male--Diagnosis --DI; Lead--Analysis--AN; Lead--Blood--BL; Middle Age; Semen--Chemistry --CH; Smoke--Analysis--AN; Smoking--Metabolism--ME; Sperm Count; Sperm Motility; Spermatozoa--Cytology--CY

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/32  
DIALOG(R) File 155: MEDLINE(R)  
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07995784 94360227

**Estimation of pooled reference values for cadmium in blood using meta-analysis and TRACY criteria.**

Alessio L; Apostoli P; Braga M; Duca PG; Herber RF; Nordberg G; Vesterberg O

Institute of Occupational Health, University of Brescia, Italy.

Science of the total environment (NETHERLANDS) Aug 2 1994, 152 (2) p169-77, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE; META-ANALYSIS

JOURNAL ANNOUNCEMENT: 9412

Subfile: INDEX MEDICUS

Reference values for blood-cadmium levels (B-Cd) are available for only a limited number of geographical areas and for particular population strata (sex, age, smoking habits). This paper, in agreement with the TRACY guidelines, describes and discusses the criteria used to rank published papers on reference values for cadmium retrieved by Medline and Toxline between 1976 and 1991. The TRACY criteria deal with the grading of published papers in terms of their suitability for calculating provisional reference values. Only four out of 18 papers were considered suitable for the TRACY project. The four articles were finally used via meta-analysis to provide provisional reference values for smokers and non-smokers. The comparison of results obtained using published statistics and individual data is used to discuss the appropriateness of meta-analysis in the case of cadmium. Due to the availability of large enough studies and to the clear differences across countries, the suitability of a compound upper reference limit to B-Cd levels seems limited.

Tags: Human; Male

Descriptors: \*Cadmium--Blood--BL; Adult; Reference Values; Smoking--Blood--BL; Smoking--Epidemiology--EP  
CAS Registry No.: 7440-43-9 (Cadmium)

19/9/33

DIALOG(R)File 155:MEDLINE(R)

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07995783 94360226

Unusually high blood cadmium associated with cigarette smoking among three subgroups of the general population, Quebec, Canada.

Benedetti JL; Dewailly E; Turcotte F; Lefebvre M

Centre de toxicologie du Quebec, Centre hospitalier de l'universite Laval, Canada.

Science of the total environment (NETHERLANDS) Aug 2 1994, 152 (2) p161-7, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9412

Subfile: INDEX MEDICUS

Blood cadmium levels were measured in 554 persons without any known professional exposure to this metal. They were grouped in three samples; one entirely of 142 Inuit, one of 212 caucasian city dwellers and one of 200 caucasian rural residents. While blood cadmium levels measured in non-smokers are comparable to those reported in published reports, those of current cigarette smokers were 10-20 times higher than non-smokers. These blood cadmium values stand in sharp contrast to what has been published so far and make the average smokers of Canadian-made cigarettes medically unfit for employment in jobs associated with potential cadmium exposure.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Eskimos; \*Rural Population; \*Smoking --Blood--BL; \*Urban Population; Adolescence; Adult; Middle Age; Quebec

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/34

DIALOG(R)File 155:MEDLINE(R)

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07981666 94338197

A pilot study of lead and cadmium exposure in young children in Stockholm, Sweden: methodological considerations using capillary blood microsampling.

Berglund M; Lind B; Lannero E; Vahter M  
Institute of Environmental Medicine, Karolinska Institute, Stockholm, Sweden.

Archives of environmental contamination and toxicology (UNITED STATES)  
Aug 1994, 27 (2) p281-7, ISSN 0090-4341 Journal Code: 6YD

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9411

Subfile: INDEX MEDICUS

A capillary blood microsampling technique was tested among urban young children in Stockholm. Blood lead (BPb) and hemoglobin (Hb) concentrations were determined in capillary blood obtained by fingerstick from 41 children, 13-20 months old, and the accompanying parent. The quality control included control for lead (Pb) and cadmium (Cd) contamination of material and equipment used for blood sampling, washing procedures for the hands and fingers to be punctured, comparisons of Pb and Cd concentrations in blood obtained by fingerstick and by brachial vein puncture from the same individuals, analysis of external quality control samples for Pb and Cd in blood together with the collected samples, and evaluation of the analytical performance using linear regression analysis. The results showed that blood sampling material may contaminate the blood samples with amounts of Pb and Cd that would seriously influence the monitoring results in the low concentration range (< 100 micrograms Pb/L and < 1 microgram Cd/L). However, it is possible to obtain reliable BPb concentrations (> 10 micrograms Pb/L), but not BCd concentrations (< 1 microgram Cd/L), with the capillary blood microsampling technique tested provided that a strict quality control is applied. The sampling procedure tested was well accepted by the children and their parents. The children's median BPb concentration (27 micrograms/L; range 9-73 micrograms/L) was similar to the median BPb concentration of their parents (27 micrograms/L; range 7-74 micrograms/L). However, the correlation between child and parent BPb concentrations was poor ( $R^2 = 0.20$ ), which may indicate different sources to Pb exposure in children and parents.

Tags: Comparative Study; Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Environmental Exposure; \*Lead--Blood--BL; Adult; Equipment Contamination; Infant; Sex Factors; Sweden; Urban Population

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/35

DIALOG(R)File 155:MEDLINE(R)

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07948900 94287166

Blood cadmium levels in non-occupationally exposed adult subjects in Singapore.

Chia SE; Chan OY; Sam CT; Heng BH

Department of Community, Occupational and Family Medicine, National University of Singapore.

Science of the total environment (NETHERLANDS) May 2 1994, 145 (1-2)  
p119-23, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9409

Subfile: INDEX MEDICUS

Cadmium concentrations in whole blood were measured in subjects with no occupational exposure to cadmium. The study covered 128 males and 150 females from the three main ethnic groups in Singapore (namely Chinese, Malays and Indians). The geometric means (GM) of blood cadmium (Cd<sub>B</sub>) levels of non-smoking males and females were 0.21 microgram/l and 0.26 microgram/l, respectively. Smokers had higher GM Cd<sub>B</sub> levels than non-smokers. Significant ethnic differences were observed in both sexes, with Indian males having the highest GM Cd<sub>B</sub> level of 0.48 microgram/l. Among the females, the Chinese had the highest GM Cd<sub>B</sub> level: 0.33 microgram/l. Differences in dietary habits may have contributed to the observed ethnic differences in blood cadmium levels.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Environmental Exposure--Analysis--AN;  
\*Smoking--Blood--BL; Adolescence; Adult; Middle Age; Singapore--Ethnology  
--EH

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/36

DIALOG(R) File 155: MEDLINE(R)

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07744678 94212125

Biological monitoring of arsenic, lead and cadmium in occupationally and environmentally exposed pregnant women.

Lagerkvist BJ; Soderberg HA; Nordberg GF; Ekesrydh S; Englyst V

Department of Environmental Medicine, University of Ume.ANG.a, Sweden.

Scandinavian journal of work, environment & health (FINLAND) 1993, 19 Suppl 1 p50-3, ISSN 0355-3140 Journal Code: UEB

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9407

Subfile: INDEX MEDICUS

Lead and cadmium in blood (B-Pb and B-Cd, respectively) and arsenic in urine (U-As) were analyzed three times during pregnancy for women living around a metal smelter and women living in a reference town. The B-Pb levels were significantly higher in the smelter town. In the women of both towns, the B-Pb levels increased during pregnancy. Women who were employed at the smelter had higher B-Pb levels than women in the surrounding area. There were no significant differences in the B-Cd levels between the smelter and reference towns, except for non- and ex-smokers at the onset of pregnancy. No difference between the two areas was seen among the smokers, whose cadmium levels were twice those of non- and ex-smokers. There were no significant differences in the U-As levels, which were comparable with previously reported values in Sweden.

Tags: Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Air Pollutants, Environmental--Analysis--AN; \*Arsenic--Urine--UR; \*Cadmium--Blood--BL; \*Environmental Monitoring; \*Lead--Blood--BL; \*Pregnancy--Blood--BL; Environmental Exposure; Industry; Occupational Exposure; Pregnancy--Urine--UR; Smoking--Blood--BL

CAS Registry No.: 0 (Air Pollutants, Environmental); 7439-92-1 (Lead); 7440-38-2 (Arsenic); 7440-43-9 (Cadmium)

19/9/37

DIALOG(R)File 155:MEDLINE(R)

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07644660 94011446

Blood lead and cadmium in a general population in Jinan City, China.

Qu JB; Xin XF; Li SX; Ikeda M

Department of Public Health, Shandong Medical University, Jinan, China.

International archives of occupational and environmental health (GERMANY)

1993, 65 (1 Suppl) pS201-4, ISSN 0340-0131 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9401

Subfile: INDEX MEDICUS

In 1991, blood samples were obtained from 150 adult Jinan citizens (74 men and 76 women at the ages of 20 to 57 years) who had no known occupational exposure to heavy metals. Age, sex, two social habits of smoking and drinking (in terms of daily consumption) and negative occupational history were examined in a medical interview. The samples were analyzed for lead (Pb-B) and cadmium (Cd-B) with a flame atomic absorption spectrometer. The geometric mean (GM) Pb-B and Cd-B were 92.3 and 0.94 micrograms/l, respectively, among 39 nonsmoking men, whereas the counterpart values were 123.4 micrograms/l and 2.61 micrograms/l among 35 smoking men (mean consumption: > 15 cigarettes/day); the difference was significant both for Pb-B and Cd-B. Comparison between 39 male and 76 female nonsmokers showed that Pb-B was significantly higher in men (92.3 micrograms/l) than in women (71.6 micrograms/l, whereas the difference in Cd-B (0.94 micrograms/l) for men versus 0.83 micrograms/l for women) was insignificant. When the women were classified by decade of age and Cd-B were compared, there was a trend of age-dependent increase in Cd-B from 0.60 micrograms/l in 20s to 1.24 micrograms/l in 40s, followed by no further increase at higher ages. Age-dependent changes were not remarkable in Pb-B in women, or Cd-B and Pb-B in men. No significant time-dependent changes were observed when the present results were compared with the results from two similar studies conducted in 1983 and 1985, respectively.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Environmental Monitoring; \*Lead--Blood --BL; Adult; Age Factors; China; Environmental Exposure--Analysis--AN; Middle Age; Sex Factors; Smoking; Urban Population

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/38

DIALOG(R)File 155:MEDLINE(R)

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07533492 93236435

Environmental exposure and lifestyle predictors of lead, cadmium, PCB, and DDT levels in Great Lakes fish eaters.

Hovinga ME; Sowers M; Humphrey HE

Department of Epidemiology, School of Public Health, University of Alabama, Birmingham.

Archives of environmental health (UNITED STATES) Mar-Apr 1993, 48 (2) p98-104, ISSN 0003-9896 Journal Code: 6YO

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9307

Subfile: AIM; INDEX MEDICUS

A previously characterized cohort of 115 Great Lakes fish eaters and 95 non-fish-eating regional controls was reexamined in 1989. Levels of blood lead and cadmium and serum PCB and DDT were measured. Lifestyle characteristics, including recent and historic fish consumption, were evaluated as predictors of contaminant levels using multivariate regression analysis. Significantly elevated serum PCB and DDT levels were observed in fish eaters, compared with controls. Historic fish consumption, rather than recent consumption, was identified as the primary predictor of current serum levels. Mean blood lead and cadmium were also significantly higher in fish eaters than in controls. However, the primary predictors of lead and cadmium were behavioral exposures--specifically smoking and self-reported occupational and recreational exposure--rather than fish consumption. These findings illustrate the importance of evaluating a variety of possible sources when investigating human exposure to environmental contaminants.

Tags: Animal; Comparative Study; Female; Human; Male; Support, U.S. Gov't, Non-P.H.S.

Descriptors: \*Cadmium--Blood--BL; \*DDT--Blood--BL; \*Environmental Exposure; \*Fishes; \*Food Contamination; \*Lead--Blood--BL; \*Polychlorinated Biphenyls--Blood--BL; Adult; Aged; Diet; Great Lakes Region; Life Style; Linear Models; Middle Age; Smoking; Water Pollution, Chemical--Adverse Effects--AE

CAS Registry No.: 0 (Polychlorinated Biphenyls); 50-29-3 (DDT); 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/39

DIALOG(R) File 155: MEDLINE(R)

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07518909 93209709

Danish external quality assessment scheme: an interlaboratory comparison study on lead, cadmium and chromium in lyophilized human blood concentrate.

Anglov T; Holst E; Christensen JM

National Institute of Occupational Health, Copenhagen, Denmark.

International archives of occupational and environmental health (GERMANY)

1993, 64 (6) p431-8, ISSN 0340-0131 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9307

Subfile: INDEX MEDICUS

A Danish External Quality Assessment Scheme (EQAS) was carried out by the Danish National Institute of Occupational Health during the period 1988-1992. The scheme was implemented for 29 international laboratories from 15 countries assaying lead, cadmium, and chromium in human blood to ascertain the systematic error and uncertainty of the analytical methods. In the survey the quality control material AMI B701-B705, based on lyophilized human whole-blood concentrate, were used. As an estimate of the true values the reference values used in this evaluation were (a) the computed values, i.e., sum of the basal and spiked trace element concentration, and (b) the consensus values normally used in the Danish EQAS. This international evaluation of lead, cadmium, and chromium in human blood demonstrated that the use of lyophilized human blood concentrate quality control materials combined with this scheme is valuable in estimating the systematic error and the uncertainty of the analytical methods. For evaluating analytical performance, the computed values were preferable to the consensus values for lead and cadmium in human blood. Due to analytical difficulties suitable reference values were not established for chromium in blood. The study revealed analytical difficulties for cadmium and chromium in human blood. The assessment of laboratories according to established performance indexes indicates that few laboratories can maintain these performance indexes.

Tags: Comparative Study; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Chemistry, Clinical--Standards--ST;  
\*Chromium--Blood--BL; \*Laboratories--Standards--ST; \*Lead--Blood--BL;  
Denmark; Quality Control; Reference Values

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium); 7440-47-3  
(Chromium)

19/9/40  
DIALOG(R)File 155:MEDLINE(R)  
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07276402 95092079  
Influence of diet on blood cadmium in Greenlanders.  
Tarp U; Hansen JC  
Institute of Environmental and Occupational Medicine, University of  
Aarhus, Denmark.  
Arctic medical research (FINLAND) 1991, Suppl p768-9, ISSN 0782-226X  
Journal Code: ABR  
Languages: ENGLISH  
Document type: JOURNAL ARTICLE  
JOURNAL ANNOUNCEMENT: 9503  
Subfile: INDEX MEDICUS  
Tags: Female; Human; Male  
Descriptors: \*Cadmium--Blood--BL; \*Diet; Adolescence; Adult; Aged;  
Cadmium--Analysis--AN; Child; Child, Preschool; Food Contamination;  
Greenland; Hair--Chemistry--CH; Middle Age; Smoking  
CAS Registry No.: 7440-43-9 (Cadmium)

19/9/41

DIALOG(R)File 155:MEDLINE(R)

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07274069 93126818

Blood and urinary cadmium levels in Inuit living in Kuujjuaq, Canada.

Benedetti JL; Turcotte F; Lefebvre M; Therrien F; Weber JP

Centre de Toxicologie du Quebec, Canada.

Science of the total environment (NETHERLANDS) Dec 15 1992, 127 (1-2)

p167-72, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9304

Subfile: INDEX MEDICUS

Blood and urine cadmium concentrations have been determined in a group of 85 Inuit residents of Kuujjuaq, Quebec, Canada, drawn from actively hunting households. Mean blood cadmium values are high at 39.4 nmol/l, varying between 6.6 in non-smokers and 60.3 in smokers. No association of blood cadmium with self-reported offal consumption could be found. Median urine cadmium concentrations are elevated at 2.3 mumol/mol creatinine and rise substantially with age: 0.9 in the 30-39 age group; 3.2 among the 40-59 age group; and 4.1 in the 60 and over.

Tags: Animal; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Eskimos; \*Food Habits; \*Meat; Adolescence; Adult; Aged; Cadmium--Urine--UR; Child; Middle Age; Quebec; Reindeer; Smoking

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/42

DIALOG(R)File 155:MEDLINE(R)

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07229147 93273424

**Definition of reference values for Cd-B and Cd-U: methodological aspects and preliminary results.**

Alessio L; Apostoli P; Duca PG; Braga M

Institute of Occupational Health, University of Brescia, Italy.

IARC scientific publications (FRANCE) 1992, (118) p93-9, ISSN 0300-5038 Journal Code: GKH

Languages: ENGLISH

Document type: JOURNAL ARTICLE; REVIEW; REVIEW LITERATURE

JOURNAL ANNOUNCEMENT: 9309

Subfile: INDEX MEDICUS

In the present study, a definition of the reference values of blood cadmium (Cd-B) and urinary cadmium (Cd-U) was attempted, adopting the same methodology as that used for Hg-B by ICOH and IUPAC. Papers published from 1976 onwards were reviewed. The majority of the studies were concerned with the formation of control groups for toxicological and epidemiological investigations rather than with the definition of reference values. Since the number of subjects for whom data on cadmium were available was small, only the data on Cd-B were considered. After evaluation, only four studies were found to be suitable for the establishment of tentative reference values for Cd-B. It is essential in all such studies to check the statistical and analytical methods for correctness, and the case-list must be selected taking smoking into account as the main interfering factor. It was found that Cd-B values show less dispersion when geometric means and standard geometric deviations are used instead of arithmetic means and standard deviations. (20 Refs.)

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Cadmium--Urine--UR; Chemistry, Analytical--Methods--MT; Reference Values  
CAS Registry No.: 7440-43-9 (Cadmium)

19/9/43  
DIALOG(R)File 155:MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

07229146 93273423

Analytical quality control of cadmium and lead in blood and cadmium in urine: results of its implementation during a five-year epidemiological study.

Claeys F; Ducoffre G; Sartor F; Roels H  
Institute of Hygiene and Epidemiology, Epidemiology Unit, Brussels, Belgium.

IARC scientific publications (FRANCE) 1992, (118) p83-92, ISSN 0300-5038 Journal Code: GKH

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9309

Subfile: INDEX MEDICUS

Quality-control programmes are very important in assessing the reliability of biological analyses. Such programmes are essential if misleading results in epidemiological studies dealing with low levels of exposure to heavy metals present in the general environment (e.g., cadmium, lead) are to be avoided. Internal and external quality-control programmes for the measurement of cadmium and lead in blood and of cadmium in urine were implemented from 1985 to 1989 in support of a national epidemiological study, Cadmibel (2327 participants), conducted in Belgium to assess the effects of environmental exposure to cadmium and lead on the general population. Apart from these programmes, inter-comparisons between the two participating laboratories were carried out on 10% of the samples. The results of these quality-control programmes met external acceptability criteria, emphasizing the analytical proficiency of these measurements at the relatively low concentrations in the Cadmibel study.

Tags: Comparative Study; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Cadmium--Urine--UR; \*Chemistry, Analytical--Standards--ST; \*Lead--Blood--BL; Cadmium Poisoning --Epidemiology--EP; Environmental Exposure; Epidemiologic Methods; Quality Control; Reproducibility of Results

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/44

DIALOG(R) File 155: MEDLINE(R)

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07229144 93273421

Biological monitoring of the general population for cadmium.

Ikeda M

Department of Public Health, Kyoto University Faculty of Medicine, Japan.

IARC scientific publications (FRANCE) 1992, (118) p65-72, ISSN  
0300-5038 Journal Code: GKH

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9309

Subfile: INDEX MEDICUS

Over 2000 blood samples and about 1000 24-h total food duplicates were collected in 49 non-polluted regions in Japan, and analysed for cadmium (Cd-B and Cd-F). Cd-B increased with age to reach a plateau at 40-59 years, where the geometric mean (GM) Cd-B was 3.2 ng/ml in men and 3.7 ng/ml in women. Smoking also increased Cd-B. The GMs of Cd-F were 43.9 and 37.0 micrograms/day for men and women, respectively, with boiled rice as a major source of cadmium (> 40%). Cd-B correlated significantly with Cd-F when compared on a regional mean basis. Similar Cd-B analyses among non-smoking women showed that Cd-B was lower in Korea (ca. 1.6 ng/ml) and in China (1.3 ng/ml) than in Japan. This observation is in accordance with the fact that rice in Korea (16.1 ng/g dry weight) and China (7.6 ng/g) contained less cadmium than that in Japan (52.5 ng/g). A preliminary follow-up in 1989 suggests a decrease in Cd-B (by ca. 30%) among the Japanese population, probably due to a reduction in cadmium in rice (ca. 14%) and a decreased rice intake.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Analysis--AN; \*Environmental Monitoring; \*Food Contamination; Adult; Cadmium--Blood--BL; Cadmium--Urine--UR; China --Epidemiology--EP; Environmental Exposure; Follow-Up Studies; Food Analysis; Japan--Epidemiology--EP; Korea--Epidemiology--EP; Middle Age; Rice--Chemistry--CH; Smoking--Blood--BL; Smoking--Urine--UR

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/45  
DTALOG(R)File 155:MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

07171113 93074132

Exposure to environmental tobacco smoke in the household and urinary cotinine excretion, heavy metals retention, and lung function.

Willers S; Attewell R; Bensryd I; Schutz A; Skarping G; Vahter M  
Department of Occupational and Environmental Medicine, General Hospital-Lund University, Malmo, Sweden.

Archives of environmental health (UNITED STATES) Sep-Oct 1992, 47 (5)  
p357-63, ISSN 0003-9896 Journal Code: 6YO

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9302

Subfile: AIM; INDEX MEDICUS

The relationship between urinary levels of cotinine (U-cotinine) and arsenic (U-As), blood levels of cadmium (B-Cd), blood levels of lead (B-Pb), lung function, and questionnaire data on smoking habits were studied in 107 parents and their 46 children (7-10 y of age). There was a statistically significant relationship between the reported amount of tobacco smoked and U-cotinine levels. Nonsmokers who were married to persons who smoked had three times higher U-cotinine levels than nonsmokers whose spouses did not smoke. There was a significant association between the number of parents who smoked in the family and the U-cotinine levels of children. If only one parent smoked, maternal smoking was of greater importance than paternal smoking. There was also an association between U-cotinine and B-Cd. A study of lung function in the children revealed that vital capacity and functional residual capacity (corrected for sex, age, and height) increased as the number of parents who smoked increased. Therefore, the present study showed that (1) U-cotinine was a useful index of active smoking and environmental tobacco smoke exposure in adults and children, (2) U-cotinine was associated with the blood concentration of cadmium, and (3) environmental tobacco smoke exposure was associated with changes in lung function of children.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cotinine--Urine--UR; \*Lung--Physiology--PH; \*Tobacco Smoke Pollution--Adverse Effects--AE; Adult; Arsenic--Urine--UR; Cadmium--Blood--BL; Child; Lead--Blood--BL; Middle Age; Parents; Smoking--Adverse Effects--AE; Sweden

CAS Registry No.: 486-56-6 (Cotinine); 7439-92-1 (Lead); 7440-38-2 (Arsenic); 7440-43-9 (Cadmium)

19/9/46

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

07171112 93074131

Decrease in blood cadmium levels over time in Belgium.

Ducoffre G; Claeys F; Sartor F

Institute of Hygiene and Epidemiology, Department of Toxicology and Epidemiology, Brussels, Belgium.

Archives of environmental health (UNITED STATES) Sep-Oct 1992, 47 (5)  
p354-6, ISSN 0003-9896 Journal Code: 6YO

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9302

Subfile: AIM; INDEX MEDICUS

During the time period from 1984 to 1988, blood cadmium concentration decreased by 56% in 31 males who were not occupationally exposed to cadmium and who lived in a Belgian urban area where there existed nonferrous industries. A 40% decrease in blood cadmium concentration was also observed in an independent cross-sectional survey conducted in 1985 and 1988 among 412 subjects who lived in a rural area. This latter decrease persisted when the main determinants of blood cadmium concentration--gender, age, and tobacco--were allowed for. The results presented are consistent with a decrease in environmental cadmium exposure in Belgium.

Tags: Comparative Study; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; Adult; Age Factors; Aged; Aged, 80 and over; Belgium; Cross-Sectional Studies; Environmental Exposure; Longitudinal Studies; Middle Age; Smoking

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/47

DIALOG(R)File 155:MEDLINE(R)

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07129522 93008947

Direct determination of cadmium and lead in whole blood by potentiometric stripping analysis [see comments]

Ostapczuk P

Institute of Applied Physical Chemistry, Research Center (KFA) Julich,  
FRG.

Clinical chemistry (UNITED STATES) Oct 1992, 38 (10) p1995-2001,  
ISSN 0009-9147 Journal Code: DBZ

Comment in Clin Chem 1992 Oct;38(10):1927-9

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9301

Subfile: INDEX MEDICUS

The commercially available equipment for potentiometric stripping analysis (PSA) was tested for routine lead and cadmium determination in whole-blood samples. In contrast to anodic stripping voltammetry, PSA is not subject to background interferences from organic electroactive constituents in the sample or to the presence of dissolved oxygen (i.e., oxygen removal is not necessary). To determine lead and cadmium by PSA, it is sufficient to dilute the blood sample with an appropriate supporting electrolyte (0.5 mol/L HCl). The detection limit changes with deposition time and volume of blood sample used. For 1 mL of blood and a 1-min deposition time, the detection limit is 1 microgram/L for both elements. If the deposition time increases to 10 min, cadmium can be determined at its normal concentration in blood (the detection limit is improved to < 0.1 microgram/L). Procedures for routine determination of lead and cadmium in whole blood are presented.

Tags: Comparative Study; Human

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; \*Potentiometry  
--Methods--MT; Hydrogen-Ion Concentration; Polyethylene Glycols;  
Potentiometry--Statistical and Numerical Data--SN; Potentiometry  
--Standards--ST; Quality Control

CAS Registry No.: 0 (Polyethylene Glycols); 7439-92-1 (Lead);  
7440-43-9 (Cadmium); 9002-93-1 (Octoxynol)

19/9/48

DIALOG(R) File 155: MEDLINE(R)

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07076119 92335837

Study of environmental pollutants in and around the city of Lahore, Pakistan. II. Concentrations of cadmium in blood of different groups of people.

Hussain T; Khan IU; Khan MA

Institute of Chemistry, University of the Punjab, Lahore, Pakistan.

Science of the total environment (NETHERLANDS) Jun 1 1992, 119 p169-78  
ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9210

Subfile: INDEX MEDICUS

Cadmium concentrations were measured in the whole blood of six different groups of persons living in and around the city of Lahore. The cadmium concentrations in the blood of normal persons of both sexes were distributed log normally. The values were lower among the young and increased gradually to reach a plateau at an average age of 45 years and then decreased. There was a trend of a gradual increase of cadmium blood concentrations with age in male industrial workers and female exposed groups. Cadmium-blood concentrations in cancer patients were significantly lower when compared to the rest of the groups, however no statistical correlation between Cd-blood concentration and age of cancer patients was observed.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Environmental Pollutants--Analysis--AN  
; \*Occupational Exposure; \*Urban Population; Age Factors; Neoplasms--Blood  
--BL; Pakistan; Sex Characteristics

CAS Registry No.: 0 (Environmental Pollutants); 7440-43-9 (Cadmium)

19/9/49

DIALOG(R)File 155:MEDLINE(R)

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06992346 92149666

Cadmium, hypertension and smoking [letter]

Korkmaz ME; Arik N; Oto A; Turgan C; Yasavul U; Caglar S; Isimer A; Sayar

A

Nephron (SWITZERLAND) 1992, 60 (1) p116, ISSN 0028-2766

Journal Code: NW8

Languages: ENGLISH

Document type: LETTER

JOURNAL ANNOUNCEMENT: 9205

Subfile: INDEX MEDICUS

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; \*Smoking  
--Blood--BL; Adult; Blood Pressure--Physiology--PH; Cadmium--Physiology--PH  
; Hypertension--Physiopathology--PP; Middle Age; Smoking--Physiopathology  
--PP

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/50  
DIALOG(R)File 155:MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

06964914 91137039

Preliminary study of the distribution of the toxic elements As, Cd, and Hg in human hair and tissues by RNAA.

Zhuang GS; Wang YS; Tan MG; Zhi M; Pan WQ; Cheng YD  
Shanghai Institute of Nuclear Research, Academia Sinica, Shanghai,  
People's Republic of China.

Biological trace element research (UNITED STATES) Jul-Dec 1990, 26-27  
p729-36, ISSN 0163-4984 Journal Code: AU1

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9105

Subfile: INDEX MEDICUS

In order to study the relationships between trace element concentrations of hair and internal body burdens, a radiochemical NAA technique has been used for determination of the elements As, Cd, and Hg in autopsy samples of liver, kidney-cortex, lung, and hair from 24 male persons who died by accident. High significant positive correlations were observed between the As concentration in hair and in kidney-cortex, and between Cd and Zn concentrations in kidney-cortex. The contents of Cd, both for lung and kidney-cortex, were related to the smoking habits of the subjects.

Tags: Human; Male

Descriptors: \*Arsenic--Analysis--AN; \*Cadmium--Analysis--AN; \*Hair--Chemistry--CH; \*Mercury--Analysis--AN; Adult; Body Burden; Kidney Cortex--Chemistry--CH; Lung--Chemistry--CH; Middle Age; Neutron Activation Analysis--Methods--MT; Smoking--Adverse Effects--AE; Tissue Distribution

CAS Registry No.: 7439-97-6 (Mercury); 7440-38-2 (Arsenic); 7440-43-9 (Cadmium)

19/9/51

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

06964879 91137002

In vivo measurements of cadmium and lead in occupationally-exposed workers and an urban population.

Morgan WD; Ryde SJ; Jones SJ; Wyatt RM; Hainsworth IR; Cobbold SS; Evans CJ; Braithwaite RA

Department of Medical Physics, Singleton Hospital, Swansea, Wales, UK.

Biological trace element research (UNITED STATES) Jul-Dec 1990, 26-27 p407-14, ISSN 0163-4984 Journal Code: AU1

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9105

Subfile: INDEX MEDICUS

This paper reports the preliminary findings of a survey of lead and cadmium body burdens in a nonoccupationally exposed population in Swansea, Wales, using the techniques of in vivo neutron activation and X-ray fluorescence analysis. Some measurements on an occupationally cadmium-exposed group are also included. The results confirm the association between cadmium and smoking and bone lead and age. The in vivo measurements demonstrate a degree of comparability with other data, which supports the further detailed analysis of the relationships between body burden and exposure, on the one hand, and possible health effects on the other.

Tags: Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Lead--Analysis--AN; \*Occupational Exposure; Adult; Aged; Body Burden; Bone and Bones--Chemistry--CH; Cadmium --Blood--BL; Environmental Exposure; Kidney--Chemistry--CH; Lead--Blood--BL ; Liver--Chemistry--CH; Middle Age; Neutron Activation Analysis; Smoking --Adverse Effects--AE; Spectrometry, X-Ray Emission; Urban Population; Wales

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/52

DIALOG(R) File 155: MEDLINE(R)

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06964878 91137001

In vivo neutron activation analysis of organ cadmium burdens. Referent levels in liver and kidney and the impact of smoking.

Franklin DM; Guthrie CJ; Chettle DR; Scott MC; Mason HJ; Davison AG; Newman Taylor AJ

School of Physics and Space Research, University of Birmingham, England.  
Biological trace element research (UNITED STATES) Jul-Dec 1990, 26-27  
p401-6, ISSN 0163-4984 Journal Code: AU1

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9105

Subfile: INDEX MEDICUS

In vivo neutron activation measurements of liver and kidney cadmium have been made in 77 exposed workers and 101 referents. Cadmium levels were higher in exposed workers than in referents; both in liver, 25.7 cf. 0.6 micrograms/g, and kidney, 17.9 cf. 2.7 mg. The 19 referents who never smoked had lower mean organ cadmium burdens than the other referents, the difference achieving statistical significance in the kidney, p less than .01. Cigarette smoking was estimated to increase cadmium body burden by 370 +/- 140 micrograms/pack year. These referent cadmium levels are similar to, although slightly below, previous in vivo and autopsy data.

Tags: Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Kidney--Chemistry--CH; \*Liver--Chemistry--CH; \*Neutron Activation Analysis--Methods--MT; Body Burden; Middle Age; Occupational Exposure; Smoking--Adverse Effects--AE

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/53

DIALOG(R)File 155: MEDLINE(R)

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06944546 91349741

Lead, cadmium, arsenic, and mercury levels in maternal and fetal cord blood.

Soong YK; Tseng R; Liu C; Lin PW

Department of Obstetrics and Gynecology, Chang Gung Memorial Hospital, Linkou Medical Center, Taipei, Taiwan R.O.C.

Journal of the Formosan Medical Association (TAIWAN) Jan 1991, 90 (1) p59-65, ISSN 0929-6646 Journal Code: BLQ

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9112

Subfile: INDEX MEDICUS

In this study the levels of lead, arsenic, cadmium and mercury were measured by the method of graphite-furnace atomic absorption spectrophotometry in paired maternal and fetal cord blood ( $n = 168$ ) collected from three cities in Taiwan, (Kaohsiung, Taipei and Keelung). The mean values of those heavy metals were within normal limits. There was no difference in levels by maternal parity or fetal sex. The mean value for the level of lead in maternal blood was 64.8 micrograms/L, and 40.9 micrograms/L for the umbilical-cord blood; comparing the three locations by ANOVA analysis, there was no difference in maternal or fetal blood levels. Mean maternal As concentrations (6.8 +/- 0.58 micrograms/L) and umbilical cord blood levels (7.9 +/- 0.67 micrograms/L) were within reference levels. The mean Cd concentrations in maternal blood were (1.30 micrograms/L) significantly higher than that of the umbilical-cord blood concentrations (0.78 micrograms/L). The maternal Cd concentrations (1.62 micrograms/L) of Kaohsiung were significantly higher than that (1.24 micrograms/L) of Taipei. The fetal Cd concentrations of Kaohsiung (1.04 micrograms/L) were also significantly higher than those (0.7 micrograms/L, 0.6 micrograms/L) of Taipei and Keelung. The mean umbilical-cord blood Hg concentration (28.8 micrograms/L) was higher than that (19.4 micrograms/L) of maternal blood. The maternal Hg concentrations of Taipei were significantly higher than those of Keelung. The fetal Hg concentrations (28.8 micrograms/L) of Taipei were also marginally higher than that of Keelung and Kaohsiung.

Tags: Comparative Study; Female; Human

Descriptors: \*Arsenic--Blood--BL; \*Cadmium--Blood--BL; \*Fetal Blood --Chemistry--CH; \*Lead--Blood--BL; \*Mercury--Blood--BL; \*Pregnancy--Blood --BL; Infant, Newborn; Parity; Sex Factors; Spectrophotometry, Atomic Absorption

CAS Registry No.: 7439-92-1 (Lead); 7439-97-6 (Mercury); 7440-38-2 (Arsenic); 7440-43-9 (Cadmium)

19/9/54

DIALOG(R) File 155: MEDLINE(R)  
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06794041 92022501

Estimated dietary intake of lead and cadmium and their concentration in blood.

Louekari K; Valkonen S; Pousi S; Virtanen L

National Finnish Board of Waters and Environment, Helsinki, Finland.

Science of the total environment (NETHERLANDS) Jun 1991, 105 p87-99,

ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9201

Subfile: INDEX MEDICUS

Dietary intake of lead and cadmium and the concentration of Pb and Cd in blood were determined for 42 non-smoking subjects not occupationally exposed to Pb or Cd. The aim of the study was to analyze: (i) the relation between calculated dietary intake of Pb and Cd and the concentration of these metals in blood; and (ii) the methodological problems associated with these two measurements of exposure. The mean dietary intakes of Cd and Pb were 14.5 (SD, 3.1) and 52.9 (SD, 17.9) micrograms day<sup>-1</sup>, respectively. The concentrations of Pb and Cd in blood were 0.28 mumol l<sup>-1</sup> (SD, 0.12) and less than 0.1 microgram l<sup>-1</sup>, respectively. The relation between dietary intake and concentration in blood was similar to that found in other countries. However, the distributions of these two variables were quite different. This suggests that dietary intake does not accurately reflect the concentration of lead in blood. The methodological problems associated with estimating the dietary intake of toxic metals were: mistakes in keeping food diaries; errors in transferring data from diaries to the computer; invalid food composition or recipe data in the data base used in the calculations. The concentration of Pb and Cd in blood is not necessarily a good indicator of exposure, since only a small proportion of the total body burden is in the blood, and interactions of Pb and Cd with other food constituents during absorption are possible.

Tags: Female; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Cadmium--Blood--BL; \*Diet; \*Lead--Analysis--AN; \*Lead--Blood--BL; Food Analysis; Spectrophotometry, Atomic Absorption

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/55  
DIALOG(R) File 155: MEDLINE(R)  
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06649826 90376859

Renal effects of cadmium body burden of the general population [published erratum appears in Lancet 1991 Jun 22;337(8756):1554]

Buchet JP; Lauwerys R; Roels H; Bernard A; Bruaux P; Claeys F; Ducoffre G ; de Plaen P; Staessen J; Amery A; et al

Industrial Toxicology and Occupational Medicine Unit, University of Louvain, Brussels, Belgium.

Lancet (ENGLAND) Sep 22 1990, 336 (8717) p699-702, ISSN 0140-6736

Journal Code: L0S

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9012

Subfile: AIM; INDEX MEDICUS

In a cross-sectional population study to assess whether environmental exposure to cadmium is associated with renal dysfunction, 1699 subjects aged 20-80 years were studied as a random sample of four areas of Belgium with varying degrees of cadmium pollution. After standardisation for several possible confounding factors, five variables (urinary excretion of retinol-binding protein, N-acetyl-beta-glucosaminidase, beta 2-microglobulin, aminoacids, and calcium) were significantly associated with the urinary excretion of cadmium (as a marker of cadmium body burden), suggesting the presence of tubular dysfunction. There was a 10% probability of values of these variables being abnormal when cadmium excretion exceeded 2-4 micrograms/24 h. Excretion reached this threshold in 10% of non-smokers. There was also evidence that diabetic patients may be more susceptible to the toxic effect of cadmium on the renal proximal tubule.

Tags: Comparative Study; Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Urine--UR; \*Kidney Tubules, Proximal --Physiopathology--PP; beta 2-Microglobulin--Urine--UR; Acetylglucosaminida se--Urine--UR; Adult; Age Factors; Aged; Aged, 80 and over; Amino Acids --Urine--UR; Belgium; Body Burden; Cadmium--Blood--BL; Calcium--Urine--UR; Cross-Sectional Studies; Environmental Exposure; Evaluation Studies; Kidney Tubules, Proximal--Drug Effects--DE; Middle Age; Regression Analysis; Retinol-Binding Proteins--Urine--UR; Sampling Studies; Sex Factors; Smoking --Adverse Effects--AE

CAS Registry No.: 0 (beta 2-Microglobulin); 0 (Amino Acids); 0 (Retinol-Binding Proteins); 7440-43-9 (Cadmium); 7440-70-2 (Calcium)

Enzyme No.: EC 3.2.1.30 (Acetylglucosaminidase)

19/9/56

DIALOG(R) File 155: MEDLINE(R)

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06540709 91121015

Influence of smoking, alcohol, and dietary habits on blood Pb and Cd levels.

Maranelli G; Apostoli P; Ferrari P  
Institute of Occupational Health, University of Verona, Ospedale Policlinico, Italy.

Bulletin of environmental contamination and toxicology (UNITED STATES)  
Dec 1990, 45 (6) p804-10, ISSN 0007-4861 Journal Code: BFN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9105

Subfile: INDEX MEDICUS

Tags: Human; Male

Descriptors: \*Alcohol Drinking--Blood--BL; \*Cadmium--Blood--BL; \*Diet; \*Lead--Blood--BL; \*Smoking--Blood--BL; Adult; Dietary Carbohydrates --Pharmacology--PD; Dietary Fats--Pharmacology--PD; Dietary Proteins --Pharmacology--PD; Middle Age; Reference Values; Thiocyanates--Blood--BL  
CAS Registry No.: 0 (Dietary Fats); 0 (Dietary Proteins); 0 (Thiocyanates); 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/57

DIALOG(R)File 155:MEDLINE(R)

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06447733 90381399

Hair cadmium level of smoker and non-smoker human volunteers in and around Calcutta City.

Chattopadhyay PK; Joshi HC; Samaddar KR

Department of Botany, Kalyani University, Kalyani, West Bengal, India.

Bulletin of environmental contamination and toxicology (UNITED STATES)

Aug 1990, 45 (2) p177-80, ISSN 0007-4861 Journal Code: BFN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9012

Subfile: INDEX MEDICUS

Tags: Human; Male

Descriptors: \*Cadmium--Analysis--AN; \*Hair--Analysis--AN; \*Smoking--Metabolism--ME; Adolescence; Adult; Aging--Metabolism--ME; India; Middle Age; Rural Population; Urban Population

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/58

DIALOG(R) File 155: MEDLINE(R)

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06426442 90330367

**Blood cadmium in London civil servants.**

Staessen J; Yeoman WB; Fletcher AE; Markowe HL; Marmot MG; Rose G;  
Sennemce A; Shipley MJ; Bulpitt CJ

Department of Medicine, Royal Postgraduate Medical School, Hammersmith  
Hospital, London, UK.

International journal of epidemiology (ENGLAND) Jun 1990, 19 (2)  
p362-6, ISSN 0300-5771 Journal Code: GR6

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9011

Subfile: INDEX MEDICUS

Blood cadmium was measured in 466 randomly selected London civil servants not exposed to heavy metals at work. Blood cadmium ranged from 3.6 to 75.6 nmol/L (0.4 to 8.5 micrograms/L) with a geometric mean of 6.4 nmol/L (0.7 micrograms/L) in nonsmokers and 13.6 nmol/L (1.5 micrograms/L) in smokers ( $p$  less than 0.001). Blood cadmium was higher in women than in men (9.5 versus 7.8 nmol/L) and was inversely correlated with employment grade ( $p$  less than 0.001). The associations with age, body weight and alcohol intake were not significant. After adjusting for gender and the number of cigarettes smoked per day, 36% of the variance of blood cadmium was explained, while the contribution of employment grade was not significant. There was an unexpected negative relationship between serum creatinine and blood cadmium in men ( $r$  = -0.16;  $p$  less than 0.01). This was not true in women ( $r$  = +0.03), but the correlation remained present in men after adjustment for age, body mass index and smoking. In contrast, in the two sexes, the correlations between blood pressure and blood cadmium were weak and not statistically significant. In conclusion, in unexposed subjects, gender and smoking are important determinants of blood cadmium. In addition, a low level of environmental exposure to cadmium is not associated with a deterioration of renal function or an increase in blood pressure.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; Age Factors; Blood Pressure --Drug Effects--DE; Creatinine--Blood--BL; Kidney--Drug Effects--DE; London; Menopause--Blood--BL; Sex Factors; Smoking--Blood--BL

CAS Registry No.: 60-27-5 (Creatinine); 7440-43-9 (Cadmium)

19/9/59

DIALOG(R) File 155: MEDLINE(R)  
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06404275 90276539

Smoking, hair cadmium and urinary tract stones [letter]

Durak I; Sahin A; Perk H

European urology (SWITZERLAND) 1990, 17 (3) p267-8, ISSN 0302-2838

Journal Code: ENM

Languages: ENGLISH

Document type: LETTER

JOURNAL ANNOUNCEMENT: 9009

Subfile: INDEX MEDICUS

Tags: Human

Descriptors: \*Cadmium--Analysis--AN; \*Hair--Analysis--AN; \*Smoking  
--Metabolism--ME; \*Urinary Calculi--Analysis--AN; Adult  
CAS Registry No.: 7440-43-9 (Cadmium)

19/9/60

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

06149542 89377634

The intake of cadmium in the Kempen, an area in the south of The Netherlands.

Copius Peereboom-Stegeman JH; Copius Peereboom JW

Department of Toxicology, Medical Faculty, University of Nijmegen, The Netherlands.

Ecotoxicology and environmental safety (UNITED STATES) Aug 1989, 18  
(1) p93-108, ISSN 0147-6513 Journal Code: EDK

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8912

Subfile: INDEX MEDICUS

In The Netherlands many areas with soil pollution have been detected. The largest polluted area is a zone of 350 km<sup>2</sup> in the Kempen, in the south of The Netherlands. This Kempen zone is polluted with heavy metals, especially cadmium (Cd) and zinc (Zn), emitted from metal factories in the Netherlands and in Belgium. Because of the high Cd in soil, vegetables grown in that area contain relatively high Cd concentrations. The Cd uptake by inhabitants of these areas--especially individuals consuming vegetables from their own gardens--therefore is considerably increased. This Cd intake is shown to be higher than the provisionally tolerated weekly uptake of Cd set by the WHO. The role of smoking in Cd intake is discussed.

Tags: Human

Descriptors: \*Cadmium--Analysis--AN; \*Soil Pollutants--Analysis--AN; Cadmium--Metabolism--ME; Cereals--Analysis--AN; Diet; Environmental Monitoring; Netherlands; Risk Factors; Smoking--Adverse Effects--AE; Vegetables--Analysis--AN; Water Pollution, Chemical; Zinc--Analysis--AN

CAS Registry No.: 0 (Soil Pollutants); 7440-43-9 (Cadmium); 7440-66-6 (Zinc)

19/9/61

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

05827881 88070530

Levels of lead, cadmium, zinc and copper in the blood of an urban population.

Khandekar RN; Raghunath R; Mishra UC

Air Monitoring Section, Bhabha Atomic Research Centre, Trombay, Bombay, India.

Science of the total environment (NETHERLANDS) Oct 1987, 66 p185-91,  
ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8803

Subfile: INDEX MEDICUS

Levels of lead, cadmium, zinc and copper were measured in the blood of normal children and adults of Greater Bombay, India using differential pulse anodic stripping voltammetry. The median concentrations of Pb, Cd, Zn and Cu in the whole blood of children and adults were 11.54, 0.21, 484.2 and 86.2 micrograms dl<sup>-1</sup>, respectively. The blood lead concentration showed an increase with age. Children living in industrial zones with high vehicular traffic have significantly higher blood lead concentrations than their counterparts living in the cleaner suburban parts of the city. The mean levels of Pb, Cd, Zn and Cu in blood of Bombay children and adults are compared with those from other countries.

Tags: Comparative Study; Human

Descriptors: \*Cadmium--Blood--BL; \*Copper--Blood--BL; \*Lead--Blood--BL;  
\*Zinc--Blood--BL; Adult; Child; India; Urban Population; Vehicle Emissions  
CAS Registry No.: 0 (Vehicle Emissions); 7439-92-1 (Lead); 7440-43-9  
(Cadmium); 7440-50-8 (Copper); 7440-66-6 (Zinc)

19/9/62

DIALOG(R) File 155: MEDLINE(R)

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05727547 89264227

Extracorporeal complexation and haemodialysis for the treatment of cadmium poisoning. I. Effects of four chelators on the in vitro elimination of cadmium from human blood.

Sheabar FZ; Yannai S

Department of Food Engineering and Biotechnology, Technion-Israel Institute of Technology, Haifa.

Pharmacology & toxicology (DENMARK) Mar 1989, 64 (3) p257-61, ISSN 0901-9928 Journal Code: PHT

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8909

Subfile: INDEX MEDICUS

The effect of ethylenediamine tetraacetic acid (EDTA), glutathione (GSH), citrate and 2,3-dimercaptosuccinic acid (DMSA) on the elimination of cadmium (Cd) from human blood, by complexing haemodialysis, was investigated in vitro. A significant increase in elimination rate was observed with all four chelators compared to that observed without chelators. EDTA was found to be the most effective agent, which at a level of 0.01M in the dialysate facilitated elimination of 80% of the blood Cd originally present.

Tags: Comparative Study; Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Cadmium Poisoning--Therapy--TH; \*Chelating Agents--Therapeutic Use--TU; Blood Cells--Metabolism--ME; Edetic Acid--Pharmacology--PD; Glutathione--Pharmacology--PD; Hemodialysis; Hydrogen-Ion Concentration; Time Factors

CAS Registry No.: 0 (Chelating Agents); 60-00-4 (Edetic Acid); 70-18-8 (Glutathione); 7440-43-9 (Cadmium)

19/9/63

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

05627769 90093534

Does cadmium contribute to the development of renal parenchymal hypertension?

Geiger H; Bahner U; Heidland A

University of Wuerzburg, Department of Medicine, FRG.

International journal of artificial organs (ITALY) Nov 1989, 12 (11)  
p733-7, ISSN 0391-3988 Journal Code: GQO

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9004

Subfile: INDEX MEDICUS

In our study we investigated 36 out-patients with renal disease, 22 of whom were hypertensive. In all patients proteinuria was present ( $4.30 \pm 5.05$  g protein/day) and kidney diseases were verified by renal biopsy. Blood cadmium in non-smokers was significantly ( $p < 0.05$ ) lower than in smokers. We found a positive correlation between cadmium-concentration of blood and urine ( $p < 0.01$ ,  $R = 0.44$ ) and between cadmium-concentration of blood and blood uric acid ( $p < 0.01$ ,  $R = 0.44$ ). Proteinuria was weakly correlated with cadmium concentration of urine ( $p < 0.05$ ,  $R = 0.35$ ). Patients with renal hypertension showed a significantly higher ( $p < 0.05$ ) urine cadmium excretion per day ( $1.60 \pm 1.12$  micrograms/day) compared to normotensives with a disease of the kidney ( $1.14 \pm 1.47$  micrograms/day). Our results indicate that cadmium may be involved in the development of hypertension in patients with renal disease.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Adverse Effects--AE; \*Hypertension, Renal --Chemically Induced--CI; Cadmium--Blood--BL; Cadmium--Urine--UR; Electrolytes--Blood--BL; Smoking--Adverse Effects--AE

CAS Registry No.: 0 (Electrolytes); 7440-43-9 (Cadmium)

19/9/64  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

05601520 90034311

The intrapartum content of toxic metals in maternal blood and umbilical cord blood.

Sikorski R; Paszkowski T; SLawinski P; Szkoda J; Zmudzki J; Skawinski S  
Ginekologia polska (POLAND) Mar 1989, 60 (3) p151-5, ISSN 0017-0011

Journal Code: FR3

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 9002

Subfile: INDEX MEDICUS

The concentrations of cadmium, lead and total mercury were determined by atomic absorption spectrometry in maternal blood and umbilical cord blood collected during the III-rd stage of term delivery from 56 mother-neonate pairs. Cadmium and mercury levels measured on both sides of placenta did not differ significantly while lead levels in maternal blood were significantly higher than its cord blood values. In all three metals studied, the concentrations in maternal blood strongly correlated with the corresponding cord blood values. A significant, positive correlation was established between the parity of the examined women and the umbilical cord blood contents of lead and mercury. The obtained results support the opinion that human placenta does not form an effective barrier to toxic metal intake by the fetus.

Tags: Female; Human

Descriptors: \*Cadmium--Blood--BL; \*Fetal Blood--Analysis--AN; \*Lead--Blood--BL; \*Mercury--Blood--BL; \*Pregnancy--Blood--BL; Adult; Maternal-Fetal Exchange; Parity; Poland; Smoking--Blood--BL

CAS Registry No.: 7439-92-1 (Lead); 7439-97-6 (Mercury); 7440-43-9 (Cadmium)

19/9/65

DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

05564272 89349278

Zinc, cadmium, and hypertension in parturient women [see comments]

Lazebnik N; Kuhnert BR; Kuhnert PM

Department of Obstetrics and Gynecology, Cleveland Metropolitan General Hospital, OH 44109.

American journal of obstetrics and gynecology (UNITED STATES) Aug 1989, 161 (2) p437-40, ISSN 0002-9378 . Journal Code: 3NI

Contract/Grant No.: 5M01-RR-00210, RR, NCRR; R01-HD-17015, HD, NICHD

Comment in Am J Obstet Gynecol 1990 Jul;163(1 Pt 1):242-3

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8911

Subfile: AIM; INDEX MEDICUS

Zinc deficiency and cadmium toxicity have both been implicated in hypertension during pregnancy. The goals of this study were twofold: first, to assess the different zinc indices (plasma, red blood cell zinc, heat-labile alkaline phosphatase, and placental zinc) in normotensive and hypertensive parturients to determine whether they are altered in the different types of hypertension that occur during pregnancy; second, to assess whole-blood cadmium and placental cadmium with regard to hypertension and zinc status. Patients were diagnosed as having chronic hypertension or preeclamptic toxemia and were then further divided into groups on the basis of smoking status. Each patient was matched with a normal control subject based on age, parity, and smoking status. Forty-three hypertensive patients and their matched control subjects were studied. No differences were found in the various zinc indices between chronic hypertensive parturients and normal control subjects. However, in parturients with preeclamptic toxemia, the plasma zinc level was 19% lower than in control subjects ( $p$  less than 0.02); these patients had the lowest plasma zinc level of the three groups. Placental zinc was also 12% lower in patients with preeclamptic toxemia than in control subjects ( $p$  less than 0.04). Whole-blood cadmium and placental cadmium levels did not differ between control subjects or hypertensive patients. However, a significant positive correlation was found between whole-blood cadmium and plasma zinc levels in preeclamptic toxemia ( $r = 0.53$ ;  $p$  less than 0.05). The results support a marginal zinc deficiency in parturients with preeclamptic toxemia but not in those with chronic hypertension. The role of cadmium in the cause of preeclamptic toxemia remains unclear.

Tags: Comparative Study; Female; Human; Support, U.S. Gov't, P.H.S.

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; \*Pre-Eclampsia--Blood--BL; \*Zinc--Blood--BL; Alkaline Phosphatase--Blood--BL; Erythrocytes--Analysis--AN; Hypertension--Etiology--ET; Placenta--Analysis--AN; Pre-Eclampsia--Etiology--ET; Pregnancy; Smoking--Blood--BL; Zinc--Deficiency--DF

CAS Registry No.: 7440-43-9 (Cadmium); 7440-66-6 (zinc)

Enzyme No.: EC 3.1.3.1 (Alkaline Phosphatase)

19/9/66

DIALOG(R) File 155: MEDLINE(R)

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05554463 89325243

Cadmium and chromium as markers of smoking in human lung tissue.

Paakkko P; Kokkonen P; Anttila S; Kalliomaki PL

Department of Pathology, University of Oulu, Finland.

Environmental research (UNITED STATES) Aug 1989, 49 (2) p197-207,

ISSN 0013-9351 Journal Code: EI2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8911

Subfile: INDEX MEDICUS

The pulmonary cadmium (Cd) and chromium (Cr) contents from 45 decreased persons from Northern Finland were determined by plasma emission spectrometry (DCP-AES). These subjects did not have any malignant diseases or known occupational exposure to heavy metals. The pulmonary metal concentrations were compared with smoking history, pulmonary emphysema, age, and occupation. The mean Cd concentrations for the nonsmokers, smokers, and exsmokers were 0.4 (SD +/- 0.4), 3.0 (SD +/- 2.2), and 1.1 (SD +/- 1.0) micrograms/dry wt, and the corresponding values for Cr were 1.3 (SD +/- 0.9), 4.3 (SD +/- 3.3), and 4.8 (SD +/- 4.0) micrograms/g dry wt, respectively. The pulmonary Cr content increased with age and smoking time, but showed no connection with occupation. The Cd content was dependent only on smoking-related variables, increasing with the amount of tobacco smoked. The pulmonary Cd was seen to return to the level of nonsmokers in 21-22 years after cessation of smoking, whereas Cr showed no decreasing tendency with the time since smoking stopped.

Tags: Human; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Chromium--Analysis--AN; \*Lung--Radiography--RA; \*Smoking--Metabolism--ME; Aged; Lung--Metabolism--ME; Middle Age; Regression Analysis

CAS Registry No.: 7440-43-9 (Cadmium); 7440-47-3 (Chromium)

19/9/67  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

05544131 89298981

Blood cadmium levels in the populations of Masan, Korea, and Miyagi, Japan: an inter-regional comparison.

Watanabe T; Nakatsuka H; Seiji K; Ioue O; Cho KS; Lee KM; Lee BK; Lee SH; Ikeda M

Department of Environmental Health, Tohoku University School of Medicine, Sendai, Japan.

Toxicology letters (NETHERLANDS) May 1989, 47 (2) p155-63, ISSN 0378-4274 Journal Code: VZN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8910

Subfile: INDEX MEDICUS

Blood samples were collected from factory workers (with no occupational exposure to metals including cadmium) in Masan (167 subjects), Korea, in 1986, and Miyagi prefecture (270 subjects) Japan, in 1987. The samples were analyzed for cadmium in a single laboratory by flameless atomic absorption spectrophotometry under strict quality control. The effect of aging was detected in Masan and possibly also in Miyagi. The effect of smoking was evident among male smokers in Miyagi. Comparison with findings in a sister study on blood cadmium levels in China (taking the effects of smoking and aging into account) showed regional differences: the levels were lower in China, higher in Korea and probably highest in Japan. The smoking-associated increase in blood cadmium level per cigarette was 2-3 times higher in China than in Japan. The blood cadmium levels in the study regions appeared to be associated with the cadmium content of local rice as well as with local rice-eating habits.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; Adult; Aging--Blood--BL; Cross-Cultural Comparison; Japan; Korea; Middle Age; Rice--Adverse Effects--AE; Sex Factors; Smoking

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/68

DIALOG(R)File 155:MEDLINE(R)

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05544130 89298980

Blood cadmium levels in the populations of 3 Chinese cities.

Watanabe T; Qu JB; Jin C; Liu YT; Yin SN; Nakatsuka H; Seiji K; Inoue O; Ikeda M

Department of Environmental Health, Tohoku University School of Medicine, Sendai, Japan.

Toxicology letters (NETHERLANDS) May 1989, 47 (2) p145-53, ISSN 0378-4274 Journal Code: VZN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8910

Subfile: INDEX MEDICUS

Blood samples were collected from male and female factory workers aged greater than or equal to 16 years (with no occupational exposure to metals including cadmium) in the 3 cities of Hefei (323 subjects), Shenyang (78 subjects), and Jinxi (137 subjects) in China from 1985 to 1987. The samples were analyzed for cadmium in a single laboratory by automated flameless atomic absorption spectrophotometry under strict quality control. The effect of smoking was evident in Hefei, Shenyang and Jinxi, while the effect of aging was not apparent. There were no sex or regional differences in blood cadmium levels in non-smokers in the 3 cities (e.g., 1.2, 1.3 and 1.4 micrograms/l as geometric means in non-smoking women in Hefei, Shenyang and Jinxi, respectively). There was general agreement in blood cadmium levels between the present results and the values reported in the literature, although the latter values were generally based on small study populations.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; Adult; Aging--Blood--BL; China; Middle Age; Sex Factors; Smoking--Blood--BL; Spectrophotometry, Atomic Absorption

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/69

DIALOG(R) File 155: MEDLINE(R)

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05518876 89226502

Human seminal plasma cadmium: comparison with fertility and smoking habits.

Saaranen M; Kantola M; Saarikoski S; Vanha-Perttula T

Department of Anatomy, University of Kuopio, Finland.

Andrologia (GERMANY, WEST) Mar-Apr 1989, 21 (2) p140-5, ISSN 0303-4569 Journal Code: 4QP

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8908

Subfile: INDEX MEDICUS

Cadmium, selenium and zinc were determined in seminal plasma and serum of 64 men by atomic absorption spectrometry (AAS). The mean (+/- SD) cadmium concentrations in seminal plasma and serum were 0.22 +/- 0.22 micrograms and 0.28 +/- 0.10 micrograms, respectively, but they did not correlate with each other. Smokers (n = 31) had significantly (p less than 0.01) higher serum cadmium concentrations than non-smokers (n = 31). Also seminal plasma cadmium in smokers was elevated, but a significant difference to non-smokers was only found if more than 20 cigarettes were consumed daily. No differences were found in semen quality and fertility between smokers and non-smokers. The seminal plasma cadmium had no correlation to selenium or zinc which, however, displayed a positive correlation ( $r = 0.852$ , p less than 0.001) to each other. It is concluded that smoking increases the exposure to cadmium. Although no obvious reproductive suppression was observed, heavy smoking may possibly enhance toxic effects in men under other detrimental exposures.

Tags: Comparative Study; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Analysis--AN; \*Semen--Analysis--AN; Adult; Cadmium--Adverse Effects--AE; Cadmium--Blood--BL; Infertility, Male--Etiology--ET; Selenium--Analysis--AN; Smoking--Adverse Effects--AE; Smoking--Metabolism--ME; Zinc--Analysis--AN

CAS Registry No.: 7440-43-9 (Cadmium); 7440-66-6 (Zinc); 7782-49-2 (Selenium)

19/9/70  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

05478639 88142236  
Cadmium in lung tissue as marker for smoking [letter]  
Paakkko P; Anttila S; Kokkonen P; Kalliomaki PL  
Lancet (ENGLAND) Feb 27 1988, 1 (8583) p477, ISSN 0140-6736  
Journal Code: L0S  
Languages: ENGLISH  
Document type: LETTER  
JOURNAL ANNOUNCEMENT: 8806  
Subfile: AIM; INDEX MEDICUS  
Tags: Human; Male  
Descriptors: \*Cadmium--Analysis--AN; \*Lung--Analysis--AN; \*Smoking  
--Metabolism--ME; Aged  
CAS Registry No.: 7440-43-9 (Cadmium)

19/9/71

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

05409561 89100158

Relation between lead and cadmium in blood and the involuntary smoking of children.

Willers S; Schutz A; Attewell R; Skerfving S

Department of Occupational and Environmental Medicine, Lund University,  
General Hospital, Malmo, Sweden.

Scandinavian journal of work, environment & health (FINLAND) Dec 1988,  
14 (6) p385-9, ISSN 0355-3140 Journal Code: UEB

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8904

Subfile: INDEX MEDICUS

The blood lead (PbB) and blood cadmium (CdB) levels, as well as the parental smoking habits, of 133 children aged 4 to 11 years were studied. The children were from a town with a lead smeltery and a surrounding rural area. There was a significant association between the higher PbB levels of the children and involuntary (parental) smoking in the home. The CdB levels of the children were not affected by parental smoking habits. The children whose parents did not smoke at home had lower PbB values than those with one smoking parent. These children, in turn, had lower levels than children with two smoking parents. Mothers who smoked had a greater impact than fathers who smoked. There was also a dose-response relationship between the amount of tobacco smoked by the mother and the PbB level of the child. The PbB value was higher for the children living near industrial lead emissions than for children from the rural area. The association between PbB level and involuntary smoking is probably not due to inhalation of lead originating from tobacco smoke. A small airways disease affecting the absorption of inhaled lead particles is proposed as an explanation.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; \*Tobacco Smoke  
Pollution; Child; Child, Preschool; Environmental Exposure; Parents

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/72

DIALOG(R) File 155: MEDLINE(R)

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05407465 89094638

Smoking during pregnancy and the perinatal cadmium burden.

Sikorski R; Radomanski T; Paszkowski T; Skoda J

Institute of Obstetrics and Gynecology, Academy of Medicine, Lublin, Poland.

Journal of perinatal medicine (GERMANY, WEST) 1988, 16 (3) p225-31,  
ISSN 0300-5577 Journal Code: JMM

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8904

Subfile: INDEX MEDICUS

The association between maternal smoking and both morphometric birth parameters and the perinatal cadmium burden were studied. The cadmium concentrations were measured by atomic absorption spectrometry in 100 samples of maternal whole blood (MB) and in 93 samples of umbilical cord blood (CB). In the group of nonsmokers, significantly higher birth weight and decreased relative placental weight were noted as compared to the group of smokers who smoked more than 6 cigarettes a day ( $p$  less than 0.05). In both maternal and cord blood samples, the measured Cd levels were found to be significantly higher in smokers than in the nonsmoking subjects (for MB and CB  $p$  less than 0.01 and  $p$  less than 0.01 respectively). The average number of cigarettes smoked daily by the women had little effect on the levels of the metal. The Cd-MB strongly correlated with the Cd-CB ( $p$  less than 0.001). The cadmium values determined in MB and CB did not significantly affect any of the studied fetoplacental parameters. The reported findings give support for placental permeability to cadmium in humans and confirm that smoking during pregnancy leads to elevated Cd concentrations in both the mother and the fetus.

Tags: Female; Human

Descriptors: \*Cadmium--Blood--BL; \*Fetal Blood--Analysis--AN; \*Maternal-Fetal Exchange; \*Pregnancy Complications--Blood--BL; \*Smoking --Blood--BL; Adult; Birth Weight; Fetus--Anatomy and Histology--AH; Organ Weight; Placenta--Anatomy and Histology--AH; Pregnancy; Smoking--Adverse Effects--AE

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/73

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

05359165 88326563

Blood cadmium level as affected by hypertension, smoking, occupation, and body mass.

Fontana SA; Boulos BM

College of Nursing, University of Illinois, Chicago.

American journal of hypertension (UNITED STATES) Jul 1988, 1 (3 Pt 3)  
p158S-160S, ISSN 0895-7061 Journal Code: AJI

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8812

Subfile: INDEX MEDICUS

Cadmium can induce persistent hypertension in rats, yet, studies involving humans have been limited by the lack of controlling for confounding variables. The purpose of this study was to determine which lifestyle, health, and other factors are significantly related to predicting blood cadmium level. Thirty-two black female hypertensives 50-75 years of age were selected for comparison with 30 normotensives. Questionnaires were used to gather data on health and other factors. Blood cadmium levels were determined from venous blood samples using atomic absorption spectrophotometry. Smoking status, blood pressure status, and body mass were the only variables significantly related ( $P$  less than .05) to blood cadmium level. In the future, studies involving a larger sample size could further clarify a possible relationship between blood cadmium level and hypertension.

Tags: Female; Human

Descriptors: \*Body Weight; \*Cadmium--Blood--BL; \*Hypertension--Blood--BL;  
\*Occupations; \*Smoking; Aged; Hypertension--Pathology--PA; Middle Age;  
Reference Values; Regression Analysis; Retrospective Studies

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/74  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

05326725 88243207

Blood cadmium concentrations in the general population of British middle-aged men.

Pocock SJ; Delves HT; Ashby D; Shaper AG; Clayton BE  
Department of Clinical Epidemiology and General Practice, Royal Free Hospital School of Medicine, London, UK.

Human toxicology (ENGLAND) Mar 1988, 7 (2) p95-103, ISSN 0144-5952

Journal Code: GFR

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8809

Subfile: INDEX MEDICUS

Blood cadmium concentrations were determined for 6919 men aged 40-59 randomly selected from general practice registers in 24 British towns. The mean and median blood cadmium were 1.9 and 1.4 micrograms/l respectively and the distribution was highly skewed. The mean levels in non-smokers was 1.0 micrograms/l and current smokers showed a marked gradient with the daily amount smoked, with a mean of 3.9 micrograms/l in men smoking 40 or more cigarettes per day. Whereas 95% of men who never smoked had blood cadmium less than 2.0 micrograms/l, 80% of men smoking 20 or more cigarettes a day exceeded this figure. 1% of the men had blood cadmium concentrations greater than or equal to 7 micrograms/l virtually all of whom currently smoked cigarettes. Blood cadmium levels in ex-smokers were much lower than in current smokers even for those who had stopped within the past year. However, the mean levels in ex-smokers remained higher than the 'never smoked' for several years after stopping. There was little evidence that age, social class, or alcohol consumption were associated with blood cadmium levels after allowance for cigarette smoking. There is substantial geographic variation in mean blood cadmium for middle-aged men which could not be completely accounted for by smoking differences. Towns in the south and east of England all had mean levels under 2.0 micrograms/l whereas the majority of towns in other parts of Britain had mean levels greater than 2.0 micrograms/l. Possible reasons for this geographic pattern (e.g. geochemistry, industrial exposure, dietary differences) need further exploration.

Tags: Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; Adult; Age Factors; Alcoholism--Blood--BL; England; Middle Age; Random Allocation; Sex Factors; Smoking--Blood--BL; Social Class

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/75  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

05290076 88103859  
Lead and cadmium concentrations in mother and fetus [letter]  
Kuhnert BR; Kuhnert PM  
American journal of obstetrics and gynecology (UNITED STATES) Jan 1988,  
158 (1) p220-1, ISSN 0002-9378 Journal Code: 3NI  
Languages: ENGLISH  
Document type: LETTER  
JOURNAL ANNOUNCEMENT: 8804  
Subfile: AIM; INDEX MEDICUS  
Tags: Female; Human  
Descriptors: \*Cadmium--Blood--BL; \*Fetal Blood--Analysis--AN; \*Lead  
--Blood--BL; \*Smoking--Adverse Effects--AE; Pregnancy  
CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/76

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

05218602 86166539

**Cadmium metabolism in man.**

Kelman GR

Human toxicology (ENGLAND) Mar 1986, 5 (2) p91-3, ISSN 0144-5952

Journal Code: GFR

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8607

Subfile: INDEX MEDICUS

The time course of the fall in blood cadmium concentrations after cessation of exposure has been measured in nine workmen exposed to cadmium. When the initial blood cadmium concentration was below 180 nmol/l (six subjects) it declined smoothly and roughly exponentially, with a mean half-life of 20.4 months and a final asymptote of 70 nmol/l; in the remaining three subjects (initial blood cadmium concentration above 180 nmol/l) the decay was less regular and more prolonged (mean half-life 31.4 months, final asymptote 92 nmol/l). The significance of these results in relation to occupational cadmium exposure is discussed.

Tags: Human; Male

Descriptors: \*Cadmium--Blood--BL; beta 2-Microglobulin--Urine--UR; Adult; Aged; Air Pollutants, Occupational--Analysis--AN; Cadmium--Urine--UR; Half-Life; Middle Age; Prospective Studies; Smoking; Time Factors

CAS Registry No.: 0 (beta 2-Microglobulin); 0 (Air Pollutants, Occupational); 7440-43-9 (Cadmium)

19/9/77  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

05181944 87197754

Lifestyle/environmental factors and blood cadmium levels in hypertensive and normotensive individuals.

Fontana SA; Boulos BM

Journal of hypertension (ENGLAND) Dec 1986, 4 (5) pS361-3, ISSN 0263-6352 Journal Code: JHI

Contract/Grant No.: HRA 5F31NU5630-03, NU, BHP

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8708

Subfile: INDEX MEDICUS

Cadmium is a non-essential trace metal presently found at environmental concentration far exceeding its natural occurrence, to which human populations are exposed from diverse sources. Animals exposed chronically to subtoxic cadmium levels develop hypertension, yet human studies are inconclusive. In the present study, the relationship between lifestyle/environment factors and blood cadmium levels was investigated. Black females aged 50-75 years were chosen from university clinics and community settings (30 normotensives and 32 hypertensives). Questionnaires giving environmental, lifestyle and other data were collected. Cadmium blood levels were determined by atomic absorption spectrophotometry; and results indicated a high degree of precision and accuracy for the cadmium analytical technique which was used. No significant differences were found in cadmium blood levels between groups.

Tags: Comparative Study; Female; Human; Support, U.S. Gov't, P.H.S.

Descriptors: \*Cadmium--Blood--BL; \*Environmental Exposure; \*Hypertension --Etiology--ET; \*Life Style; Aged; Hypertension--Blood--BL; Middle Age; Negroid Race; United States  
CAS Registry No.: 7440-43-9 (Cadmium)

19/9/78

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

04934112 86292746

Role of cadmium and magnesium in pathogenesis of idiopathic dilated cardiomyopathy.

Smetana RH; Glogar DH

American journal of cardiology (UNITED STATES) Aug 1 1986, 58 (3)  
p364-6, ISSN 0002-9149 Journal Code: 3DQ

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8611

Subfile: AIM; INDEX MEDICUS

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Cardiovascular Diseases--Etiology--ET;  
\*Magnesium Deficiency--Complications--CO; Adolescence; Adult; Aged; Cadmium  
--Urine--UR; Cardiovascular Diseases--Physiopathology--PP; Dilatation,  
Pathologic--Etiology--ET; Heart Ventricle; Hemodynamics; Magnesium--Blood  
--BL; Magnesium--Urine--UR; Middle Age; Prospective Studies; Smoking

CAS Registry No.: 7439-95-4 (Magnesium); 7440-43-9 (Cadmium).

19/9/79  
DIALOG(R)File 155:MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

04896759 86188290

Cadmium in blood as an indicator of integrated exposure to cadmium in the urban population.

Telisman S; Azaric J; Prpic-Majic D

Bulletin of environmental contamination and toxicology (UNITED STATES)

Apr 1986, 36 (4) p491-5, ISSN 0007-4861 Journal Code: BFN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8608

Subfile: INDEX MEDICUS

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Cadmium Poisoning--Blood--BL; Adult; Aged; Aging; Child; Environmental Pollutants--Analysis--AN; Middle Age; Smoking; Urban Population

CAS Registry No.: 0 (Environmental Pollutants); 7440-43-9 (Cadmium)

19/9/80

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

04888189 86160001

Effects of pregnancy on the inter-individual variations in blood levels of lead, cadmium and mercury.

Bonithon-Kopp C; Huel G; Grasmick C; Sarmini H; Moreau T  
Biological research in pregnancy and perinatology (GERMANY, WEST) 1986,  
7 (1) p37-42, ISSN 0724-438X Journal Code: A3V

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8607

Subfile: INDEX MEDICUS

Blood samples to be analysed for lead, cadmium and mercury were taken from 417 pregnant women not occupationally exposed to these metals. Each subject was paired with a non-pregnant woman of the same age (+/- 2 years), socio-economic status, alcohol and tobacco status. Most of the inter-individual variations observed in earlier studies were confirmed in the control group. Among the pregnant women, however, such variations in blood metal levels appeared to be somewhat different compared to the control women according to the parameters studied: age of the women, alcohol and tobacco consumption. Furthermore, the study of the evolution of blood levels of lead, cadmium and mercury throughout pregnancy revealed a significant decrease in cadmium levels during the first half of pregnancy. A similar tendency was observed for lead but this did not attain statistical significance.

Tags: Comparative Study; Female; Human

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; \*Mercury--Blood--BL;  
\*Pregnancy; Adolescence; Adult; Age Factors; Alcohol Drinking; Pregnancy  
Trimester, First; Pregnancy Trimester, Second; Pregnancy Trimester, Third;  
Smoking

CAS Registry No.: 7439-92-1 (Lead); 7439-97-6 (Mercury); 7440-43-9  
(Cadmium)

19/9/81

DIALOG(R)File 155:MEDLINE(R)

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04879996 86122868

Sister chromatid exchange (SCE) in Greenlandic Eskimos. Dose-response relationship between SCE and seal diet, smoking, and blood cadmium and mercury concentrations.

Wulf HC; Kromann N; Kousgaard N; Hansen JC; Niebuhr E; Alboge K  
Science of the total environment (NETHERLANDS) Jan 1986, 48 (1-2)  
p81-94, ISSN 0048-9697 Journal Code: UJ0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8605

Subfile: INDEX MEDICUS

The mutagenicity of the chromosomes of the peripheral lymphocytes of 147 Greenlandic Eskimos living in the district of Angmagssalik, Greenland, and in Denmark, was evaluated by means of the sister chromatid exchange (SCE) test. Thirty cells from each person were examined. The purpose of the investigation was to determine if there was any relationship between mutagenic activity and diet, and hence the elements selenium, cadmium, mercury and lead. The probands were divided into three groups according to their intake of seal meat or industrially prepared food: group 1, those eating seal at least six times per week; group 2, two to five times per week; and group 3 once each week or not at all. The statistical analysis was performed by means of multiple linear regression analyses, with diet, living district, sex, age, tobacco smoking, and blood lead and mercury concentrations as variables. Forty-eight percent of the variation in SCE could be explained by differences in diet, living district, age, and tobacco consumption. Groups 1 and 2 had a 1.7 and 0.65 times higher SCE/cell, respectively, than group 3. For every additional 10 years of age of the probands, the SCE/cell increased by 0.4, and for every 10 g of tobacco smoked per day the SCE/cell was 0.7 higher compared to non-smokers. When priority was given to blood Hg concentration in the calculation, 16.3% of the total variation in SCE/cell could be explained. An increase in the blood Hg concentration of 10 micrograms l-1 corresponded to an increase of 0.3 SCE/cell. In 92 individuals blood Se and Cd concentrations were also analysed. The variables, tobacco smoking, diet, living district and Cd explained 53% of the total variation in SCE. Giving priority to the blood Hg and Cd concentrations, explained 21.4% of the total variation in SCE/cell. An increase of 10 micrograms l-1 in blood Cd and Hg corresponded to an increase in SCE/cell of 0.7 and 0.2, respectively. No influence on the SCE/cell could be attributed to the blood Pb and Se concentrations. Evaluated by the SCE test, seal diet, smoking, living district and blood Hg and Cd concentrations all contribute to mutagenicity in Greenlandic Eskimos, with seal diet as the most important of the factors examined.

Tags: Animal; Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Diet; \*Eskimos; \*Mercury--Blood--BL;  
\*Sister Chromatid Exchange; \*Smoking; Adult; Aging; Greenland; Meat; Seals  
CAS Registry No.: 7439-97-6 (Mercury); 7440-43-9 (Cadmium)

19/9/82  
DIALOG(R)File 155:MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

04742882 86029441

Cadmium concentrations in blood samples from an East Greenlandic population.

Hansen JC; Wulf HC; Kromann N; Alboge K

Danish medical bulletin (DENMARK) Oct 1985, 32 (5) p277-9, ISSN 0011-6092 Journal Code: DYN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8602

Subfile: INDEX MEDICUS

An analysis for cadmium was made of 101 human blood samples from the district of Angmagssalik, East Greenland, and 29 from East Greenlanders living temporarily in Copenhagen. No relationship could be found between concentrations of blood cadmium and ethnic origin (Eskimos--Danes), sex, age or amount of seal eaten. Only smoking habits were reflected, as a median of 2.2 micrograms/l was found in smokers and 1.1 in non-smokers. Since analyses of organs from seals have suggested that the WHO provisional, tolerable weekly intake is exceeded by a factor as high as 10 as a result of seal eating, it is surprising that seal eating is without any effect on the blood concentration.

Tags: Animal; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Cadmium Poisoning--Blood--BL; Fishes; Food Contamination; Food Habits; Greenland; Seals; Smoking  
CAS Registry No.: 7440-43-9 (Cadmium)

19/9/83

DIALOG(R)File 155:MEDLINE(R)

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04726910 85300477

The combined effect of tobacco and alcohol consumption on the level of lead and cadmium in blood.

Grasmick C; Huel G; Moreau T; Sarmini H

Science of the total environment (NETHERLANDS) Mar 1 1985, 41 (3)  
p207-17, ISSN 0048-9697 Journal Code: UU0

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8512

Subfile: INDEX MEDICUS

This study deals with the person-to-person variation in the levels of lead and cadmium in the blood of 6437 subjects (2883 men and 3554 women). The lead level (Pb-B) is clearly higher in men than in women, and the cadmium level (Cd-B) is a little higher in men than in women. Only the Pb-B varies according to age for both sexes. The results reveal that the consumption of alcohol could play an important part in the variation of lead and cadmium levels in the blood; the consumption of alcohol is associated with an increase in Pb-B but a decrease in Cd-B. These variations involving alcohol consumption remain significant regardless of smoking habits. On the other hand, an increase in Pb-B and Cd-B has been noted among smokers and, to a lesser degree, among former smokers, compared with non-smokers.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Alcohol Drinking; \*Cadmium--Blood--BL; \*Lead--Blood--BL;  
\*Smoking; Adolescence; Adult; Age Factors; Aged; Child; Child, Preschool;  
Infant; Middle Age; Sex Factors

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/84

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

04637073 83002304

Human serum carnosinase: characterization, distinction from cellular carnosinase, and activation by cadmium.

Lenney JF; George RP; Weiss AM; Kucera CM; Chan PW; Rinzler GS  
Clinica chimica acta; international journal of clinical chemistry (NETHERLANDS) Aug 18 1982, 123 (3) p221-31, ISSN 0009-8981

Journal Code: DCC

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8301

Subfile: INDEX MEDICUS

Human serum carnosinase was assayed using a simple and sensitive fluorometric method. Under optimum conditions, the average adult serum hydrolyzed 42 mu mol of carnosine per ml per hour, about 17 times the average activity reported in the literature. Cadmium was twice as effective as manganese as an activator of this enzyme. Serum carnosinase was found to be different in many respects from cellular carnosinase. For example, the serum isozyme hydrolyzed homocarnosine, whereas the cellular carnosinase did not. The apparent molecular weight of serum carnosinase was 160 000, while that of the cellular isozyme was 90 000. Although it has been reported that serum contains two molecular forms of carnosinase, only one form was detected using several electrophoretic methods and two ion exchange chromatography procedures. The concentration of serum carnosinase varied greatly between individuals. Little or no enzyme was detected in children below 10 months in age. Thereafter, the average concentration of carnosinase increased gradually to reach the adult range at age 13-15.

Tags: Comparative Study; Human

Descriptors: \*Cadmium--Blood--BL; \*Dipeptidases--Blood--BL; \*Isoenzymes--Blood--BL; Adolescence; Adult; Aged; Aging; Carnosine --Analogs and Derivatives--AA; Carnosine--Metabolism--ME; Child; Child, Preschool; Enzyme Activation--Drug Effects--DE; Infant; Isoelectric Point; Kinetics; Middle Age; Molecular Weight; Substrate Specificity

CAS Registry No.: 0 (Isoenzymes); 305-84-0 (Carnosine); 3650-73-5 (homocarnosine); 7440-43-9 (Cadmium)

Enzyme No.: EC 3.4.13 (Dipeptidases); EC 3.4.13.3 (aminoacyl-histidine dipeptidase)

19/9/85

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

04165805 84108324

Distribution of blood lead, blood cadmium, urinary cadmium, and urinary arsenic levels in employees of a copper smelter.

Lilis R; Valciukas JA; Weber JP; Fischbein A; Nicholson WJ; Campbell C; Malkin J; Selikoff IJ

Environmental research (UNITED STATES) Feb 1984, 33 (1) p76-95, ISSN 0013-9351 Journal Code: EI2

Contract/Grant No.: ES 00928, ES, NIEHS

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8405

Subfile: INDEX MEDICUS

A cross-sectional medical examination of a copper smelter work force included determination of blood lead (Pb-B), zinc protoporphyrin (ZPP), blood cadmium (Cd-B), urinary cadmium (Cd-U), and urinary arsenic (As-U), since it was known that such metal impurities were present in the copper concentrate. A total of 776 copper smelter employees (680 active and 96 retirees and ex-employees) were examined. Another 144 men, never employed in the smelter, but who had worked in copper mines (and sometimes in gold mines) were also examined. Mean Pb-B, ZPP, Cd-B, and As-U were significantly higher in active copper smelter employees than in retirees or miners, indicating exposure and absorption in the copper smelter. Significant correlations between Pb-B and Cd-B, and Cd-U and As-U were present, confirming the common source of absorption. Although there was evidence for an increased lead absorption, this was very moderate, with practically no Pb-B levels in excess of 60 micrograms/dl. A marked effect of smoking on blood cadmium levels was present; nevertheless, for all smoking categories Cd-B levels were significantly higher in active employees, indicating the independent contribution of exposure to cadmium in the smelter. Cd-U did not exceed 10 micrograms/g creatinine, the generally accepted "critical" level for the kidney, but was higher than 2 micrograms/g creatinine, a level very rarely exceeded in the general population, in a sizable proportion of those examined. The highest Cd-U levels were found in retired copper smelter employees; age might have been a contributing factor, besides a longer duration of exposure in the smelter.

Tags: Human; Male; Support, U.S. Gov't, P.H.S.

Descriptors: \*Arsenic--Urine--UR; \*Cadmium--Blood--BL; \*Copper; \*Lead --Blood--BL; \*Metallurgy; Absorption; Adult; Cadmium--Urine--UR; Cross-Sectional Studies; Environmental Exposure; Middle Age; Quebec; Smoking; Spectrophotometry, Atomic Absorption

CAS Registry No.: 7439-92-1 (Lead); 7440-38-2 (Arsenic); 7440-43-9 (Cadmium); 7440-50-8 (Copper)

19/9/86

DIALOG(R)File 155:MEDLINE(R)

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04030237 84253493

Environmental factors and uptake of cadmium among brazers using cadmium-containing hard solders.

Lundberg I; Sjogren B; Hallne U; Hedstrom L; Holgersson M  
American Industrial Hygiene Association journal (UNITED STATES) Jun 1984, 45 (6) p353-9, ISSN 0002-8894 Journal Code: 3CT

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8410

Subfile: INDEX MEDICUS

The influence of different work factors on the uptake of cadmium has been studied in 102 brazers working at least 10% of their work day with cadmium-containing hard solders. The blood concentrations of cadmium varied between less than 1 and 113 micrograms/L (less than 9 and 1010 nmol/L). Blood cadmium concentrations were below 10 micrograms/L (89 nmol/L) in 71 brazers and 31 brazers had levels equal to or above that value. The importance of some environmental factors on the blood-level of cadmium was studied with discrimination analysis. The length of the splice was found to be almost the sole determining factor for the cadmium concentration in blood. All brazers working with splices shorter than 2 cm had blood concentrations below 10 micrograms/L, while 87% of the brazers working with splices longer than 10 cm had blood concentrations equal to or above 10 micrograms/L. Other factors like age, sex, exposure time, smoking habit and brazing method were devoid of any measurable importance.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Metallurgy; Adolescence; Adult; Age Factors; Aged; Analysis of Variance; Environmental Exposure; Middle Age; Spectrophotometry, Atomic Absorption; Time Factors

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/87

DIALOG(R)File 155:MEDLINE(R)

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04013973 84207820

Cadmium content of umbilical cord blood.

Rabinowitz M; Finch H

Environmental research (UNITED STATES) Jun 1984, 34 (1) p120-2, ISSN

0013-9351 Journal Code: EI2

Contract/Grant No.: HD-08945, HD, NICHD

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8409

Subfile: INDEX MEDICUS

Cadmium was measured in the umbilical cord blood at birth from 94 healthy babies. Samples were dried and ashed at low temperatures with an oxygen plasma prior to atomic absorption spectrometry. The concentration of cadmium ranged from 0.003 to 0.210 microgram/dl, with a mean of 0.045 +/- 0.063 (SD). Blood lead, maternal smoking, and proximity of residence to automobile traffic were not statistically related to cadmium levels.

Tags: Female; Human; Support, U.S. Gov't, P.H.S.

Descriptors: \*Cadmium--Blood--BL; \*Fetal Blood--Analysis--AN; Automobiles  
; Pregnancy; Smoking

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/88

DIALOG(R) File 155: MEDLINE(R)

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03952881 84086884

Exposure to lead and cadmium of the general population of Malta.

Bruaux P; Claeys-Thoreau F; Ducoffre G; Lafontaine A; Grech A; Vassallo A  
International archives of occupational and environmental health (GERMANY,  
WEST) 1983, 53 (2) p119-25, ISSN 0340-0131 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8404

Subfile: INDEX MEDICUS

The blood levels of lead (PbB), cadmium (CdB), and zinc protoporphyrin (ZPP) were determined in 538 Maltese adult subjects. A relatively high level exposure to both metals was discovered. For lead, the median value is 274 micrograms/l with percentile 90 and 98 respectively 564 and 863 micrograms/l. These values are to be compared with the reference values proposed by a directive of the European Community, respectively 200, 300 and 350 micrograms/l. For cadmium, the median value is 2.2 micrograms/l with percentile 90 and 98 respectively 3.8 and 5.7 micrograms/l. These values are compared with those of a Belgian population which are respectively 1.7, 2.6 and 4.3 micrograms/l. The causes of this relatively high exposure are not known. A few tentative hypotheses, which are to be investigated, are made.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; Adolescence; Adult; Aged; Air Pollutants, Environmental--Analysis--AN; Belgium; Environmental Exposure; Food Contamination--Analysis--AN; Malta; Middle Age; Population Surveillance; Protoporphyrins--Blood--BL; Sex Factors; Soil Pollutants --Analysis--AN; Water Pollutants, Chemical--Analysis--AN

CAS Registry No.: 0 (Air Pollutants, Environmental); 0 (Protoporphyrins); 0 (Soil Pollutants); 0 (Water Pollutants, Chemical); 15442-64-5 (zinc protoporphyrin); 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/89

DIALOG(R) File 155: MEDLINE(R)

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03930480 84031066

Levels of cadmium and lead in blood in relation to smoking, sex, occupation, and other factors in an adult population of the FRG.

Brockhaus A; Freier I; Ewers U; Jermann E; Dolgner R

International archives of occupational and environmental health (GERMANY, WEST) 1983, 52 (2) p167-75, ISSN 0340-0130 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8402

Subfile: INDEX MEDICUS

Levels of cadmium (CdB) and lead (PbB) were determined in the blood of 579 60-65 year-old residents of Cologne and two small cities near Cologne. CdB-levels in cigarette smokers are on the average 3-4 times higher than in non-smokers (geometric means: non-smokers, 0.44 micrograms/l; less than or equal to 10 cigarettes/d, 1.16 micrograms/l; greater than 10 cigarettes/d, 1.85 micrograms/l). The results indicate that, with regard to the internal dose, cadmium exposure via smoking may contribute even more than does exposure via food. PbB-levels (geometric mean: 8.49 micrograms/100 ml; range: 2.9-30.3 micrograms/100 ml) are in the acceptable range as defined by the CEC reference values. Male smokers have on the average slightly higher PbB-levels than male non-smokers. In women PbB-levels are on the average lower than in men.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; Aged; Environmental Exposure; Germany, West; Middle Age; Occupations; Sex Factors; Smoking

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/90

DIALOG(R)File 155: MEDLINE(R)

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03929801 84029251

A comparative study of zinc, copper, cadmium, and lead levels in fertile and infertile men.

Stanwell-Smith R; Thompson SG; Haines AP; Ward RJ; Cashmore G; Stedronska J; Hendry WF

Fertility and sterility (UNITED STATES) Nov 1983, 40 (5) p670-7,

ISSN 0015-0282 Journal Code: EVF

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8402

Subfile: INDEX MEDICUS

Eighty infertile men and 38 men of known fertility were studied for investigation of both the importance of zinc, copper, cadmium, and lead to fertility and the possible interrelationships between these trace elements. The infertile men had higher mean concentrations of plasma copper than those of proven fertility. The difference was statistically significant (P less than 0.01) but was of small magnitude (approximately 1.5 mumol mean difference). The concentrations of plasma zinc, erythrocyte zinc, whole blood lead and cadmium, and seminal plasma zinc and copper did not differ significantly between infertile and fertile men. There was a significant positive relationship between sperm density and seminal plasma zinc concentration in the fertile, but not in the infertile, men. The infertile men with antisperm antibodies or counts greater than 20 million/ml had significantly higher mean levels of seminal plasma zinc than infertile men with oligospermia. The higher semen zinc in these two groups may reflect an abnormal fragility of the spermatozoa, resulting in the release of zinc, but the absence of significant overall differences between fertile and infertile men suggests that measurement of the concentration of zinc in plasma or zinc and copper in seminal plasma has little value in the routine investigation of infertility.

Tags: Comparative Study; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Copper--Blood--BL; \*Infertility, Male --Blood--BL; \*Lead--Blood--BL; \*Zinc--Blood--BL; Adult; Erythrocytes --Analysis--AN; Probability; Semen--Analysis--AN; Smoking; Sperm Count; Sperm Motility; Zinc--Analysis--AN

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium); 7440-50-8 (Copper); 7440-66-6 (Zinc)

19/9/91

DIALOG(R) File 155: MEDLINE(R)

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03910136 83287270

Cadmium levels in the blood of inhabitants in nonpolluted areas in Japan with special references to aging and smoking.

Watanabe T; Koizumi A; Fujita H; Kumai M; Ikeda M

Environmental research (UNITED STATES) Aug 1983, 31 (2) p472-83,

ISSN 0013-9351 Journal Code: EI2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8312

Subfile: INDEX MEDICUS

Blood samples, 2259 in winter and 523 in other seasons of the year, were collected nationwide in Japan from inhabitants (primarily farmers) in areas with no known man-made pollution, and analyzed for cadmium. The levels were distributed log normally, and were lower among young adults and increased gradually to reach a plateau at the 40-59 age group, where the values in females (about 3.6 ng/ml as a geometric mean) were significantly higher than in males (3.0-3.4 ng/ml). The sex difference was positive (P less than 0.01) even when 77 pairs of levels were compared between husbands and their wives, both being nonsmokers in the age range of 40-59 years. Smoking habits gave an additional increase in the blood cadmium level. The increase was dose dependent up to 20-29 cigarettes/day and leveled off with further consumption. Effects of passive smoking could not be confirmed. Seasonal variation in blood cadmium level appeared negligible. Variation in the level by geographic location in the country was of doubtful significance. The estimated ratio of cadmium doses by two routes, i.e., via the gastrointestinal tract and via the lungs, was in agreement with the ratio of the blood cadmium level among nonsmokers and the additional increase in the level due to smoking.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Aging; \*Cadmium--Blood--BL; \*Smoking; Adult; Geography; Japan; Middle Age; Rural Population; Seasons; Sex Factors; Spectrophotometry, Atomic Absorption; Urban Population

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/92

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03897686 83255414

**Blood cadmium levels in a general male population with special reference to smoking.**

Moreau T; Orssaud G; Lellouch J; Claude JR; Juguet B; Festy B  
Archives of environmental health (UNITED STATES) May-Jun 1983, 38 (3)  
p163-7, ISSN 0003-9896 Journal Code: 6YO

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8310

Subfile: AIM; INDEX MEDICUS

Blood-cadmium (Cd-B) level, blood pressure, and several biological parameters in blood were measured in 440 men who were not occupationally exposed to cadmium and who had a detailed smoking history. No significant correlation was found between Cd-B and blood pressure. Among biological parameters, those known to be related to smoking appeared significantly correlated with Cd-B. Analysis of smoking history showed that Cd-B is strongly elevated in current smokers, with a dose-effect relationship between daily consumption of tobacco and Cd-B; moreover, exsmokers had significantly higher Cd-B than nonsmokers. This finding shows that Cd-B partly reflects past exposure to cadmium.

Tags: Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Smoking; Adult; Blood Pressure; Body Height; Body Weight; Carboxyhemoglobin--Analysis--AN; France; Middle Age; Sex Factors

CAS Registry No.: 7440-43-9 (Cadmium); 9061-29-4 (Carboxyhemoglobin)

19/9/93

DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

03863642 83157559

**Assessment of exposure to lead and cadmium through biological monitoring:  
results of a UNEP/WHO global study.**

Friberg L; Vahter M

Environmental research (UNITED STATES) Feb 1983, 30 (1) p95-128,  
ISSN 0013-9351 Journal Code: EI2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8307

Subfile: INDEX MEDICUS

This paper describes a UNEP/WHO project on the assessment of human exposure to lead and cadmium through analysis of blood and kidneys. The following countries have participated: Belgium, India, Israel, Japan, Mexico, People's Republic of China, Peru, Sweden, United States, and Yugoslavia. No laboratory started the monitoring before achieving satisfactory results of quality control (QC) analysis (samples of cow blood spiked with lead and cadmium and freeze-dried horse kidney cortex for cadmium analysis) according to predetermined criteria based on a linear regression model. Two hundred teachers from one urban area in each country constituted the target group for lead and cadmium in blood and cases of "sudden, unexpected death" for cadmium in kidney cortex. QC samples were analyzed in parallel with the monitoring samples to assure validity of the obtained results. The quality assurance program also included preanalytical quality control. There was considerable variation in metal exposure between areas. Geometric means for lead in blood ranged from about 60 micrograms Pb/liter in Beijing and Tokyo to 225 in Mexico City. The values were below 100 micrograms Pb/liter also in Baltimore, Jerusalem, Lima, Stockholm, and Zagreb, and between 100 and 200 micrograms Pb/liter in Brussels and India. In general, males had higher blood levels than females and smokers higher than nonsmokers. With a few exceptions the values were lower than results reported in a recent study within the European Communities. Geometric means for cadmium in blood ranged from 0.5 microgram Cd/liter in Stockholm and Jerusalem to 1.2 in Brussels and Tokyo. Cadmium levels were considerably higher among smokers than among nonsmokers. Tokyo had the highest values for cadmium in kidney cortex with a geometric mean in the age group 40-60 years of 60-70 mg Cd/kg wet wt. Lowest values were found in Baltimore, Beijing, India, and Jerusalem, with means around 20-25 mg Cd/kg wet wt. There was a tendency toward higher values for smokers than for nonsmokers, but no differences related to sex. Data were not received from Mexico and Peru.

Tags: Animal; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; Asia; Cadmium--Analysis--AN; Cattle; Europe; Horses; Kidney Cortex--Analysis--AN; Population Surveillance; Quality Control; Regression Analysis; Smoking; World Health Organization

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/94

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03863635 83157548

Lead and cadmium levels in blood samples from the general population of Sweden.

Elinder CG; Friberg L; Lind B; Jawaaid M

Environmental research (UNITED STATES) Feb 1983, 30 (1) p233-53,

ISSN 0013-9351 Journal Code: EI2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8307

Subfile: INDEX MEDICUS

Lead and cadmium was determined in whole blood samples obtained from 473 nonoccupationally exposed adult persons in Sweden in 1980. Analyses were performed using atomic absorption spectrophotometry equipped with an electrothermal atomization unit. Accuracy of the analysis was confirmed by the analysis of quality control samples. Blood lead concentrations were shown to be significantly influenced by sex, smoking habits, and alcohol consumption. Current male smokers had a median blood lead level of 92 micrograms Pb/liter, as compared to 77 micrograms Pb/liter for nonsmokers. For females the corresponding values were 69 micrograms Pb/liter and 57 micrograms Pb/liter for current smokers and nonsmokers, respectively. Highly significant correlations were found between stated alcohol consumption and blood lead in most of the different sex and smoking categories. People living in apartments close to streets with heavy traffic in Stockholm had slightly, but not significantly, higher blood lead levels when compared to people living in areas of this city with low traffic density. Blood cadmium levels were very strongly affected by smoking habits. A significant correlation existed between the number of cigarettes consumed daily and blood cadmium concentration. The median blood cadmium level for nonsmoking males was 0.2 micrograms Cd/liter (less than or equal to 0.2, detection limit) and for females 0.3 micrograms Cd/liter. About 90% of all nonsmokers had cadmium concentrations in blood below 0.6 micrograms Cd/liter, whereas about 90% of the current male and female smokers had cadmium concentrations in blood of 0.6 micrograms Cd/liter or more.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; Adult; Aged; Alcohol Drinking; Middle Age; Quality Control; Smoking; Sweden

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/95

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03685287 85003377

Studies of lead and cadmium exposure in Glasgow, U.K.

McIntosh MJ; Moore MR; Goldberg A; Fell GS; Cunningham C; Halls DJ  
Ecology of disease (ENGLAND) 1982, 1 (2-3) p177-84, ISSN 0278-4300

Journal Code: EEG

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8501

Subfile: INDEX MEDICUS

Domestic water and whole blood samples were collected early in 1981 from two hundred volunteers living in the Glasgow area of Scotland, U.K. The concentration of lead in the water and blood samples, and of cadmium in the blood, was measured. The blood lead and cadmium concentrations were compared to those obtained in the Survey of 1979. There has been a fall in blood lead concentrations since the 1979 Survey. In contrast, the blood cadmium levels had remained similar. This diminution in blood lead concentration is attributed to a fall in water lead concentration caused by raising the pH of the water supply in the Glasgow area. The main determinant for cadmium in blood appears to be cigarette smoking habits, which had not changed.

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; Adolescence; Adult; Aged; Cadmium--Analysis--AN; Environmental Exposure; Lead--Analysis--AN; Middle Age; Scotland; Smoking; Spectrophotometry, Atomic Absorption; Water Supply--Analysis--AN

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/96

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03635631 83260515

Blood cadmium in healthy subjects and in patients with cardiovascular diseases.

Adamska-Dyniewska H; BaLa T; Florczak H; Trojanowska B

Cor et vasa (CZECHOSLOVAKIA) 1982, 24 (6) p441-7, ISSN 0010-8650

Journal Code: DR5

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8311

Subfile: INDEX MEDICUS

Blood cadmium concentration was determined in 90 healthy subjects and in 255 patients with coronary heart disease (CHD) and/or hypertension. Blood cadmium was higher in 68 healthy inhabitants of the industrial city of Lodz (0.75 +/- 0.41 micrograms %) than in 22 healthy rural inhabitants (0.38 +/- 0.35). All patients with cardiovascular diseases lived in Lodz. Blood cadmium in patients with CHD without risk factors was 0.92 +/- 0.39 micrograms %, in patients with CHD plus hyperlipidaemia 0.93 +/- 0.38, in patients with hypertension 0.98 +/- 0.46 and with CHD plus hypertension 1.01 +/- 0.46 micrograms %. The highest blood cadmium level was observed in smokers with CHD plus hypertension (1.13 +/- 0.42). The patients with renal and/or heart failure had a low blood cadmium level. This was probably due to proteinuria and a loss of cadmoothionein in urine. In each tested group, smokers had a higher blood cadmium level than non-smokers.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Coronary Disease--Blood--BL;  
\*Hypertension--Blood--BL; Adult; Coronary Disease--Complications--CO;  
Middle Age; Smoking

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/97

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03617324 83147056

Effects of aging and smoking on the cadmium levels in the blood of inhabitants in non-polluted areas.

Watanabe T; Koizumi A; Fujita H; Fujimoto H; Ishimori A; Ikeda M

Tohoku journal of experimental medicine (JAPAN) Dec 1982, 138 (4)  
p443-4, ISSN 0040-8727 Journal Code: VTF

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8306

Subfile: INDEX MEDICUS

Tags: Female; Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Aging; \*Cadmium--Blood--BL; \*Smoking; Adolescence; Adult;  
Aged; Child; Child, Preschool; Environmental Pollution; Infant; Japan;  
Middle Age

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/98

DIALOG(R) File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03613791 83130556

Blood cadmium in healthy subjects and in patients with cardiovascular diseases.

Adamska-Dyniewska H; BaLa T; Florczak H; Trojanowska B

Cor et vasa (CZECHOSLOVAKIA) 1982, 24 (6) p441-7, ISSN 0010-8650

Journal Code: DR5

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8306

Subfile: INDEX MEDICUS

Blood cadmium concentration was determined in 90 healthy subjects and in 255 patients with coronary heart disease (CHD) and/or hypertension. Blood cadmium was higher in 68 healthy inhabitants of the industrial city of Lodz (0.75 +/- 0.41 micrograms %) than in 22 healthy rural inhabitants (0.38 +/- 0.35). All patients with cardiovascular diseases lived in Lodz. Blood cadmium in patients with CHD without risk factors was 0.92 +/- 0.39 micrograms %, in patients with CHD plus hyperlipidaemia 0.93 +/- 0.38, in patients with hypertension 0.98 +/- 0.46 and with CHD plus hypertension 1.01 +/- 0.46 micrograms %. The highest blood cadmium level was observed in smokers with CHD plus hypertension (1.13 +/- 0.42). The patients with renal and/or heart failure had a low blood cadmium level. This was probably due to proteinuria and a loss of cadmoothionein in urine. In each tested group, smokers had a higher blood cadmium level than non-smokers.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Coronary Disease--Blood--BL;  
\*Hypertension--Blood--BL; Adult; Coronary Disease--Complications--CO;  
Hyperlipidemia--Complications--CO; Hypertension--Complications--CO; Middle  
Age; Poland; Rural Population; Smoking; Urban Population

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/99

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03565148 82259836

Method for the simultaneous determination of cadmium and zinc in whole blood by atomic absorption spectrophotometry and measurement in normotensive and hypertensive humans.

Tulley RT; Lehmann HP

Clinica chimica acta; international journal of clinical chemistry (NETHERLANDS) Jul 1 1982, 122 (2) p189-202, ISSN 0009-8981

Journal Code: DCC

Contract/Grant No.: AH00898, AH, BHP

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8212

Subfile: INDEX MEDICUS

A method is described for the analysis of whole blood cadmium and zinc by extraction and atomic absorption spectrophotometry, in which cadmium is analyzed using a graphite furnace, and zinc using an air-acetylene flame with a single slot burner, after dilution of the extract. Recoveries for cadmium and zinc were 100% and 106%, respectively. For cadmium the day-to-day and within-run coefficients of variation were all less than 13% at low concentrations (approximately 27 nmol/l) and 6% or less at high concentrations (approximately 89 nmol/l). For zinc the coefficients of variation for day-to-day and within-run analyses were less than 6% at low (approximately 76 mumol/l) and high concentrations (approximately 138 mumol/l). The sensitivity of the procedure is 0.5 nmol/l for cadmium and 1.2 mu mol/l for zinc. Whole blood from 72 normotensive volunteers, 56 treated hypertensives, and 15 untreated hypertensives were analyzed using this method. Cadmium levels were elevated in smokers but not significantly affected by age or sex. Zinc levels were higher in males than in females, but not significantly affected by smoking. Levels of cadmium and zinc were increased in treated hypertensives and greater still in untreated hypertensives. Significant elevations were found for cadmium in treated hypertensive females who smoked, treated and untreated hypertensive male non-smokers, and for the cadmium to zinc ratio in these latter two groups.

Tags: Female; Human; Male; Support, U.S. Gov't, P.H.S.

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; \*Spectrophotometry, Atomic Absorption--Methods--MT; \*Zinc--Blood--BL; Hypertension --Therapy--TH; Sex Factors; Smoking

CAS Registry No.: 7440-43-9 (Cadmium); 7440-66-6 (Zinc)

19/9/100

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03536291 82179672

Cadmium levels in maternal blood, fetal cord blood, and placental tissues of pregnant women who smoke.

Kuhnert PM; Kuhnert BR; Bottoms SF; Erhard P

American journal of obstetrics and gynecology (UNITED STATES) Apr 15 1982, 142 (8) p1021-5, ISSN 0002-9378 Journal Code: 3NI

Contract/Grant No.: 5M01-RR-00210, RR, NCRR

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8208

Subfile: AIM; INDEX MEDICUS

Previous studies have reported that cigarette smoking is a major source of exposure to cadmium (Cd). This study was carried out to determine the degree of exposure to Cd of pregnant women who smoke and to determine the degree of exposure to Cd of pregnant women who smoke and to determine the disposition of the Cd in the maternal-fetoplacental unit. Our data reveal that pregnant women who smoke expose themselves and their placentas to levels of Cd higher than those to which they would normally be exposed. The percentage increase in Cd due to smoking was 32% in the placenta and 59% in maternal blood; these increases are statistically significant. The mean levels of Cd in maternal blood, cord blood, and placental tissues of pregnant women who smoked were all higher than the mean levels of Cd in the same tissues and blood of pregnant women who did not smoke. In addition, the levels of Cd in the maternal blood of smokers were significantly higher than levels of Cd in the cord blood of their infants; this relationship was not found in nonsmokers. On the basis of the Cd data on cord blood and placental tissues, the fetuses found in nonsmokers. On the basis of the Cd data on cord blood and placental tissues, the fetuses of pregnant women who smoke apparently receive very little additional exposure to Cd; however, this does not lessen concern for the fetus. The presently reported increase in exposure to Cd of pregnant women due to smoking must be viewed as undesirable because Cd has been shown to alter placental function in animals, and because Cd has no known biologic function.

Tags: Comparative Study; Female; Human; Male; Support, U.S. Gov't, P.H.S.

Descriptors: \*Cadmium--Blood--BL; \*Fetal Blood--Analysis--AN; \*Placenta --Analysis--AN; \*Smoking; Adult; Apgar Score; Birth Weight; Environmental Exposure; Infant, Low Birth Weight; Infant, Newborn; Maternal-Fetal Exchange--Drug Effects--DE; Pregnancy; Thiocyanates--Blood--BL

CAS Registry No.: 0 (Thiocyanates); 7440-43-9 (Cadmium)

19/9/101  
DIALOG(R) File 155: MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

03532292 82166413

Biological assessment of exposure in factories with second degree usage of cadmium compounds.

Wibowo AA; Herber RF; van Deyck W; Zielhuis RL  
International archives of occupational and environmental health (GERMANY,  
WEST) Feb 1982, 49 (3-4) p265-73, ISSN 0340-0130 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8208

Subfile: INDEX MEDICUS

Biological assessment of occupational exposure to cadmium in five different factories with low-level second degree usage of Cd-compounds has been carried out. In 124 exposed and control male workers the following measurements, were performed: cadmium in blood (CdB) and urine (CdU), B2-microglobulin (B2M), creatinin in urine (Creat), hemoglobin (Hb) and hematocrit (Ht). Analysis of 34 pairs of workers matched according to age, smoking habits, ethnic origin and factory, established a significant difference only in CdU, the geometric means being 0.67 microgram/g Creat in the exposed group and 0.48 microgram/g Creat in the control group. Significant correlation was found between CdU x age and CdB x smoking habits. Multiple regression analysis showed that for each year increase in age CdU increased 3%, for each percent increase of CdB CdU increased 0.28%; for each cigarette smoked per day CdB increased 1.6%. It is concluded that in this type of work the low external cadmium exposure does not express itself in different CdB-levels, but only in different CdU-levels, indicating an increased body burden due to long term low levels occupational cadmium exposure. In biological assessment of exposure to Cd, it is essential to take age and smoking habits fully into account.

Tags: Human; Male; Support, Non-U.S. Gov't

Descriptors: \*Cadmium--Blood--BL; \*Smoking; Adult; Age Factors; Cadmium--Urine--UR; Environmental Exposure; Middle Age; Regression Analysis

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/102

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03447616 81279819

Simultaneous determination of cadmium and lead in whole blood and serum by computerized potentiometric stripping analysis.

Jagner D; Josefson M; Westerlund S; Aren K

Analytical chemistry (UNITED STATES) Aug 1981, 53 (9) p1406-10, ISSN 0003-2700 Journal Code: 4NR

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8112

Subfile: INDEX MEDICUS

Tags: Comparative Study; Human

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; Potentiometry  
--Methods--MT; Reference Standards

CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/103

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03413039 81199631

The relationship of blood cadmium level to hypertension and plasma norepinephrine level: A Romanian study.

Revis NW; Zinsmeister AR

Proceedings of the Society for Experimental Biology and Medicine (UNITED STATES) Jun 1981, 167 (2) p254-60, ISSN 0037-9727 Journal Code: PXX

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8109

Subfile: INDEX MEDICUS

Tags: Human; Support, U.S. Gov't, Non-P.H.S.

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; \*Norepinephrine--Blood--BL; Adult; Analysis of Variance; Middle Age; Romania; Smoking

CAS Registry No.: 51-41-2 (Norepinephrine); 7440-43-9 (Cadmium)

19/9/104

DIALOG(R)File 155: MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03377467 81118760

Blood-lead and cadmium in human hypertension.

Beevers DG; Cruickshank JK; Yeoman WB; Carter GF; Goldberg A; Moore MR  
Journal of environmental pathology and toxicology (UNITED STATES) Sep  
1980, 4 (2-3) p251-60, Journal Code: I1L

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8106

Subfile: INDEX MEDICUS

An epidemiological study amongst hypertensives and normotensives in Renfrew, Scotland, where drinking water hardness is very low (5 p.p.m.) and water-lead levels are commonly high, has shown a significant association between high blood-lead levels and high blood pressure. No association was found with indices of renal function, plasma renin or angiotensin II concentrations or serum uric acid levels. In a parallel study of blood-lead levels in Birmingham, England, where water hardness is low (20 p.p.m.) but water-lead levels are also low, high blood-lead levels were not found, no relationship was found with blood pressure and the prevalence of hypertension was lower than in Renfrew. We conclude that sub-clinic lead exposure from drinking water may be a factor in the development of hypertension. A study of blood-cadmium levels has shown no association between high blood pressure and sub-clinical cadmium exposure, but confirmed a close relation between blood-cadmium and cigarette smoking. We conclude that previous reports of a cadmium-blood pressure link may be confounded by failure to allow for the cigarette smoking habits of the subjects studied.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Etiology--ET; \*Lead--Blood--BL; Adult; England; Hypertension--Blood--BL; Middle Age; Scotland  
CAS Registry No.: 7439-92-1 (Lead); 7440-43-9 (Cadmium)

19/9/105

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03337709 81023944

Repeated surveillance of exposure to cadmium, manganese, and arsenic in school-age children living in rural, urban, and nonferrous smelter areas in Belgium.

Buchet JP; Roels H; Lauwerys R; Bruaux P; Claeys-Thoreau F; Lafontaine A; Verduyn G

Environmental research (UNITED STATES) Jun 1980, 22 (1) p95-108,  
ISSN 0013-9351 Journal Code: EI2

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8102

Subfile: INDEX MEDICUS

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Arsenic--Urine--UR; \*Cadmium--Blood--BL; \*Manganese--Blood--BL; \*Rural Population; \*Urban Population; Belgium; Cadmium--Urine--UR; Child; Environmental Pollutants; Hand; Manganese--Urine--UR; Sex Factors; Time Factors

CAS Registry No.: 0 (Environmental Pollutants); 7439-96-5 (Manganese); 7440-38-2 (Arsenic); 7440-43-9 (Cadmium)

19/9/106

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

03291823 80169035

Cadmium concentrations in blood.

Pleban P

Science (UNITED STATES) May 2 1980, 208 (4443) p520, ISSN 0036-8075

Journal Code: UJ7

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8008

Subfile: INDEX MEDICUS

Tags: Human

Descriptors: \*Cadmium--Blood--BL; \*Smoking--Physiopathology--PP; Cadmium--Urine--UR; Erythrocytes--Analysis--AN; Plasma--Analysis--AN; Specimen Handling

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/107

DIALOG(R)File 155:MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

03094328 77055189

Blood-cadmium in hypertensives and normotensives.

Beevers DG; Campbell BC; Goldberg A; Moore MR; Hawthorne VM  
Lancet (ENGLAND) Dec 4 1976, 2 (7997) p1222-4, ISSN 0140-6736

Journal Code: LOS

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7703

Subfile: AIM; INDEX MEDICUS

70 hypertensive patients and 70 controls matched for age and sex were investigated for a possible relationship between blood-cadmium and hypertension. No significant differences between the two groups were detected, although the blood-cadmium level was significantly higher in smokers as compared to non-smokers. These data do not support the hypothesis that cadmium is involved in the development of hypertension in man.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; Antihypertensive Agents--Therapeutic Use--TU; Blood Pressure; Creatinine--Blood--BL; Hypertension--Drug Therapy--DT; Middle Age; Smoking

19/9/108

DIALOG(R)File 155:MEDLINE(R)  
(c) format only 2000 Dialog Corporation. All rts. reserv.

03088510 76148634

Blood-cadmium levels in normotensive and untreated hypertensive humans.

Glauser SC; Bello CT; Glauser EM

Lancet (ENGLAND) Apr 3 1976, 1 (7962) p717-8, ISSN 0140-6736

Journal Code: LOS

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7607

Subfile: AIM; INDEX MEDICUS

Administration of cadmium to laboratory animals causes hypertension. Necropsy specimens of the liver and kidneys of human patients who had had hypertension were previously reported as showing elevated cadmium concentrations. In the present study living normal humans were found to have a blood-cadmium level of 3-4 +/- 0-5 ng/ml, while a matched group of living untreated hypertensive humans had a blood-cadmium of 11-1 +/- 1-5 ng/ml. All of the normal subjects had blood-cadmium levels below 8-0 ng/ml, while 13 of the 17 hypertensive patients had blood-cadmium levels over 8-0 ng/ml.

Tags: Animal; Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; Adult; Blood Pressure; Hypertension--Physiopathology--PP; Sex Ratio

19/9/109

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

02848903 78006382

Serum cadmium concentrations in patients from a cardiac clinic and in healthy controls. pp. 157-60.

PetitClerc C; Munan L; Kelly A; Cote M

In: Brown SS, ed. Clinical chemistry and chemical toxicology of metals. Amsterdam, Elsevier/North-Holland, 1977. W1 DE998T v.1 1977 (UNITED STATES ) Journal Code: IDM

NLM Call No.: W1 DE998T v.1 1977

Languages: ENGLISH

Document type: MONOGRAPH

JOURNAL ANNOUNCEMENT: 7801

Subfile: INDEX MEDICUS

Tags: Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Heart Diseases--Blood--BL; Adolescence ; Adult; Age Factors; Aged; Alcohol Drinking; Magnesium--Blood--BL; Middle Age; Sex Factors; Smoking; Zinc--Blood--BL

19/9/110

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

02729969 80192554

HLA phenotypes and cadmium blood level.

Gualde N; Delage C

Tissue antigens (DENMARK) Oct 1979, 14 (4) p303-8, ISSN 0001-2815

Journal Code: VSV

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8009

Subfile: INDEX MEDICUS

The distribution of HLA phenotypes was studied and the amount of cadmium blood level was determined in a group of 100 healthy subjects. The HLA-A3 phenotype seems associated with high cadmium levels in the blood. The lymphocytes transformation test with PHA and different concentrations of cadmium indicates that A3 cells are more sensitive than others to inhibition by cadmium.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*HLA Antigens--Genetics--GE; Lymphocyte Transformation; Pedigree; Phenotype; Phytohemagglutinins--Pharmacology--PD; Smoking

CAS Registry No.: 0 (HLA Antigens); 7440-43-9 (Cadmium)

19/9/111

DIALOG(R)File 155:MEDLINE(R)

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02715037 80117946

Normal levels of cadmium in diet, urine, blood, and tissues of inhabitants of the United States.

Kowal NE; Johnson DE; Kraemer DF; Pahren HR

Journal of toxicology and environmental health (UNITED STATES) Nov 1979  
, 5 (6) p995-1014, ISSN 0098-4108 Journal Code: KAA

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8006

Subfile: INDEX MEDICUS

Cd was measured in the feces, urine, blood, and hair of U.S. inhabitants without known high Cd exposure in Chicago, Illinois, and Dallas, Texas, and in autopsy tissues of accident victims in Dallas. The average intake of Cd in food was estimated to be 13-16 microgram/d and was higher for males than females. The average levels of Cd were 0.59-0.77 microgram/l in urine, 0.09-0.11 microgram per 100 ml in blood, 0.83-1.10 microgram/g in hair, 21 microgram/g in kidney cortex, 1.2 microgram/g in liver, 0.067 microgram/g in muscle, 0.58 microgram/g in pancreas, and 0.040 microgram/g in fat. Hair Cd was higher for males than females. Cd levels increased with age in urine and all tissues and were higher in cigarette smokers than nonsmokers in urine, blood, and all tissues.

Tags: Female; Human; Male

Descriptors: \*Cadmium--Analysis--AN; \*Food Analysis; Cadmium--Blood--BL; Cadmium--Urine--UR; Chicago; Diet; Feces--Analysis--AN; Reference Values; Smoking--Metabolism--ME; Texas; Tissue Distribution; United States

CAS Registry No.: 7440-43-9 (Cadmium)

19/9/112

DIALOG(R)File 155:MEDLINE(R)

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02687428 80045401

Direct determination of lead and cadmium in blood and urine by flameless atomic absorption spectrophotometry.

Lagesson V; Andrasko L

Clinical chemistry (UNITED STATES) Nov 1979, 25 (11) p1948-53, ISSN 0009-9147 Journal Code: DBZ

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 8003

Subfile: INDEX MEDICUS

We describe procedures for direct determination of lead and cadmium in blood and urine by flameless atomic absorption spectrophotometry. Before analysis, the samples are pre-ashed in microboats in an ordinary laboratory oven. In this way, many samples can be prepared and pre-ashed simultaneously. We find the procedures presented in this work to be rapid, accurate, and precise.

Tags: Comparative Study; Human

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; Cadmium--Urine--UR; Lead--Urine--UR; Microchemistry; Spectrophotometry, Atomic Absorption --Methods--MT

19/9/113

DIALOG(R)File 155:MEDLINE(R)

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02597766 79126503

Blood cadmium level and hypertension in humans.

Dally S; Maury P; Boidard D; Bacle S; Gaultier M

Clinical toxicology (UNITED STATES) 1978, 13 (3) p403-8, ISSN 0009-9309 Journal Code: DL6

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7907

Subfile: AIM; INDEX MEDICUS

Blood cadmium level was determined in 29 nontreated hypertensive male subjects and 29 controls. All were individually matched for sex, age, and smoking habits. No differences were found between hypertensives (3.3 +/- 0.4 ng/ml) and normotensives (2.6 +/- 0.4 ng/ml).

Tags: Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; Adult; Aged; Aging; Middle Age; Smoking--Blood--BL

19/9/114

DIALOG(R) File 155: MEDLINE(R)

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02572245 79055899

A rapid direct determination of cadmium in blood by anodic stripping voltammetry.

Christensen JM; Angelo H

Scandinavian journal of clinical and laboratory investigation (NORWAY)  
Nov 1978, 38 (7) p655-8, ISSN 0036-5513 Journal Code: UCP

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7903

Subfile: INDEX MEDICUS

This paper describes a rapid, sensitive anodic stripping voltammetry (ASV) method for measuring quantities of cadmium in blood. An advantage of this method is the minimal sample preparation required, using a metal-exchange reagent. A sensitivity of 4 nmol/l can be obtained. The results correlate with those obtained by atomic absorption spectroscopy. Within-run, the coefficient of variation (CV) was 8.9% at a cadmium concentration of 32 nmol/l. Between run CV was 5.4% at 37 nmol/l. The reference interval for blood cadmium concentration was 5-60 nmol/l for non-smokers and 5-85 nmol/l for cigarette-smokers. This method of cadmium analysis shows that ASV is a rapid, sensitive method for determination of blood cadmium in the normal range.

Tags: Human

Descriptors: \*Cadmium--Blood--BL; Adult; Aged; Cadmium--Analysis--AN; Indicators and Reagents; Metals--Diagnostic Use--DU; Methods; Middle Age; Smoking

19/9/115

DIALOG(R) File 155: MEDLINE(R)

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02555827 79019869

Significance of blood cadmium concentrations in patients with renal disorders or essential hypertension and the normal population.

Ward RJ; Fisher M; Tellez-Yudilevich M

Annals of clinical biochemistry (ENGLAND) Jul 1978, 15 (4) p197-200,  
ISSN 0004-5632 Journal Code: 52Y

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7901

Subfile: INDEX MEDICUS

Cadmium concentrations in whole blood have been determined in normal control subjects, in patients with untreated essential hypertension or with treated essential hypertension, and in those with acute or chronic renal disorders. High cadmium concentrations were not found in the patients with untreated essential hypertension. Most tobacco smokers were found to have high blood cadmium concentrations. When the mean cadmium concentrations from each group of patients were compared with those of the control subjects no significant differences were found. When the four groups were divided into smokers and non-smokers, however, a significantly higher mean value was found for the non-smoking renal patients in comparison with the non-smoking normal subjects. The marked increases in blood cadmium concentration in the patients with renal disorders may be attributed to impaired excretion.

Tags: Comparative Study; Female; Human; Male

Descriptors: \*Cadmium--Blood--BL; \*Hypertension--Blood--BL; \*Kidney Diseases--Blood--BL; Acute Disease; Chronic Disease; Reference Values; Smoking--Physiopathology--PP

19/9/116  
DIALOG(R)File 155:MEDLINE(R)  
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02402512 77202035

Application of blood cadmium analysis to industry using an atomic fluorescence method.

Fell GS; Ottaway JM; Hussein FE

British journal of industrial medicine (ENGLAND) May 1977, 34 (2)  
p106-9, ISSN 0007-1072 Journal Code: AXS

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7710

Subfile: INDEX MEDICUS

A flame photometric method using atomic fluorescence (AFS) for cadmium (Cd) estimation is described and applied to the measurement of Cd in blood. The AFS system employs a modified, low cost atomic absorption spectrophotometer, with a high intensity Cd light source provided by an electrodeless discharge tube, excited in a thermostatted microwave cavity. The analytical sensitivity of the technique is sufficient to permit dilution (1 in 5) of blood, before aspiration into the air-hydrogen flame. The method is rapid (25 duplicates/hour), and gives acceptable precision (coefficient of variation within batch 2-5%, between batch 8-1%). The method was applied to a reference population and to three different groups of industrial workers. The reference population had a mean blood concentration of 35.1 nmol Cd/litre. Group 1 (general categories of worker) had 65.2 nmol Cd/l, Group 2 (demolition workers), 137.9 nmol Cd/l, and Group 3 (shipbreakers), 105.9 nmol Cd/l. There was a relationship between increases in blood Cd and in blood Pb which was statistically significant for Group 3.

Tags: Comparative Study; Human; Male

Descriptors: \*Cadmium--Blood--BL; Cadmium--Analysis--AN; Environmental Exposure; Lead--Analysis--AN; Lead--Blood--BL; Spectrophotometry, Atomic Absorption

19/9/117  
DIALOG(R)File 155:MEDLINE(R)  
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02385829 77164346

Smoking habits and levels of lead and cadmium in blood in urban women.

Zielhuis RL; Stuik EJ; Herber RF; Salle HJ; Verberk MM; Posma FD; Jager JH

International archives of occupational and environmental health (GERMANY, WEST) Apr 15 1977, 39 (1) p53-8, ISSN 0340-0130 Journal Code: GPN

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7708

Subfile: INDEX MEDICUS

Tags: Female; Human

Descriptors: \*Cadmium--Blood--BL; \*Lead--Blood--BL; \*Smoking; \*Urban Population; Adult; Middle Age; Netherlands

19/9/118

DIALOG(R)File 155:MEDLINE(R)

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02371876 77114514

Determination of cadmium in blood by use of atomic absorption spectroscopy with crucibles--and a rational procedure for dry-ashing.

Vesterberg L; Bergstrom T

Clinical chemistry (UNITED STATES) Mar 1977, 23 (3) p555-9, ISSN 0009-9147 Journal Code: DBZ

Languages: ENGLISH

Document type: JOURNAL ARTICLE

JOURNAL ANNOUNCEMENT: 7706

Subfile: INDEX MEDICUS

A simple, minimal-reagent procedure for analysis of cadmium in blood is introduced. Blood samples from workers occupationally exposed to cadmium were collected with heparin. Triton X-100 surfactant was added, and 15-mL aliquots of the blood were pipetted into small nickel sampling cups and placed in a holder for 100 cups, which was enclosed in a stainless steel box. After the samples were dried and ashed in a muffle oven at various times and temperatures, cadmium was determined in an air/acetylene flame in an atomic absorption instrument with a deuterium arc background corrector. Absorbance measurements were made by signal-averaging facilities in the instrument. The conditions for analysis are specified. The method appears to be accurate and reproducible, with a CV of about 6% in the range 35-160 nmol/liter. The detection limit was 3.0 nmol/liter of blood. With the new procedure, many blood samples can be dried and ashed in parallel, which favors both simplicity and precision.

Tags: Comparative Study; Human

Descriptors: \*Cadmium--Blood--BL; Spectrophotometry, Atomic Absorption --Methods--MT; Temperature

19/9/119  
DIALOG(R) File 155: MEDLINE(R)  
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01761738 74138362  
Letter: Measurement of blood-cadmium levels.  
Ulander A; Axelson O  
Lancet (ENGLAND) Apr 1974, 1 (7859) p682-3, ISSN 0140-6736  
Journal Code: LOS  
Languages: ENGLISH  
Document type: JOURNAL ARTICLE  
JOURNAL ANNOUNCEMENT: 7407  
Subfile: AIM; INDEX MEDICUS  
Tags: Comparative Study; Female; Human; Male  
Descriptors: \*Cadmium--Blood--BL; Adult; Methods; Middle Age; Smoking;  
Spectrophotometry, Atomic Absorption

19/9/120  
DIALOG(R) File 155: MEDLINE(R)  
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01425085 74309608  
Tissue concentration of cadmium, zinc and copper from autopsy samples.  
McKenzie JM  
New Zealand medical journal (NEW ZEALAND) Jun 12 1974, 79 (517)  
p1016-9, ISSN 0028-8446 Journal Code: OBO  
Languages: ENGLISH  
Document type: JOURNAL ARTICLE  
JOURNAL ANNOUNCEMENT: 7412  
Subfile: INDEX MEDICUS  
Tags: Female; Human; Male  
Descriptors: \*Body Composition; \*Cadmium--Analysis--AN; \*Copper--Analysis  
--AN; \*Zinc--Analysis--AN; Adult; Aged; Autopsy; Hair--Analysis--AN;  
Hypertension--Metabolism--ME; Kidney--Analysis--AN; Liver--Analysis--AN;  
Lung--Analysis--AN; Middle Age; Neoplasms--Metabolism--ME; New Zealand;  
Ribs--Analysis--AN; Sex Factors; Smoking--Metabolism--ME; Spectrophotometry  
, Atomic Absorption; Spleen--Analysis--AN